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JULY 1961

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Research Methodology and Accounting Theory—Another Perspective

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A Use of Probability and Statistics in Performance Evaluation

The Importance of Idle Capacity Costs

The Importance of Idle Capacity Costs—A Rejoinder

The Classification of Corporate Stock Equities

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RESEARCH METHODOLOGY AND ACCOUNTING THEORY—ANOTHER PERSPECTIVE

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IN AN article appearing in a recent issue of THE ACCOUNTING REVIEW,¹ Professor Carl T. Devine set forth a "tentative framework . . . to indicate some possible levels of abstraction at which research in accounting could be undertaken." There was an admission that the framework would be incomplete; and, in fact, the framework was confined to four areas of investigation: logical structure and deductive systems; measurement and induction; behavioral relations; and welfare and normative responsibilities. There is no question that these could constitute areas of sufficient importance and scope for substantial future research in accounting. Unfortunately, with the possible exception of the first area suggested, an inappropriate perspective may have been conveyed relative to the interrelationships of these areas. The areas suggested are not independent areas of study. They are interrelated both with respect to their interdependence and to their correspondence to the accounting function. As a result, it may be that the proposal by Professor Devine suggests a limited view of the unified whole that constitutes accounting research.

In order to consider this possible limitation to the proposal, let us begin with reflections upon certain characteristics of the present structure of accounting theory, specifically that structure which applies to business units, and later expand this view into a broader conception of the accounting structure.

Nature of Present Structure of Accounting Theory. Whether determined from direct observation or from a study of authoritative statements, the present structure of accounting theory assumes an economic entity engaged in economic activities. Thus, "The central purpose of accounting is to make possible the periodic matching of costs (efforts) and revenues (accomplishments). This concept is the *nucleus of accounting theory*, and a benchmark that affords a fixed point of reference for accounting discussion." (Italics supplied.)² Consider also the statement: ". . . The realized net income of an enterprise meas-

¹ Carl Thomas Devine, "Research Methodology and Accounting Theory Formation," THE ACCOUNTING REVIEW, v. 35 (July, 1960), pp. 387-99.

² A. C. Littleton, *Structure of Accounting Theory*, American Accounting Association, Monograph No. 5 (Urbana, Illinois, 1953), p. 30.

ures its effectiveness as an operating unit...."⁴ Essentially, both statements signify that business units are considered to possess a central economic aim or function, the earning of income.⁵ In addition these statements suggest a more basic proposition. It is that in measuring and setting forth realized *income as the basic criterion of efficiency* for business units as a group, the accountant may actually be imposing upon these units a form of social goal of making a realized income; social in the sense that all units are considered as working toward a central goal. Specifically, it is quite probable that the accountant has accepted and now advances the social goal of business units as that of "economic efficiency."

Assumptions Underlying Present Structure. But the adoption of such a function as the core of the structure of accounting theory necessitates the acceptance of certain conclusions as to the validity of conclusions in the underlying disciplines related to the structure.

Behavioral Relation Assumption. In the related area of behavioral relations this present core-function requires, at least in an implicit sense, the assumption that the external parties interested in accounting data are motivated to action primarily by the economic results reflected in the income reported by the business unit. In a similar manner acceptance of the present structure of accounting theory necessitates the corollary assumption that the parties who direct the activities of the business unit also are motivated primarily by the same economic results if for no other reason than the knowledge that their accomplishments will be evaluated in these terms.⁶

Measurement Assumptions. With reference to accounting measurements the acceptance of an objective of reflecting economic efficiency necessitates the use of certain measurement methods. That is, the activities considered significant for meas-

urement, the particular attributes to measure, the choice of a unit of measurement (monetary unit), and the classifications of relationships are basically determinable from the presently accepted core-function and related operational propositions, such as realization, going concern, and costs attach.

Summary and Implications. It must be concluded that within the present accounting structure, a central core-function has been adopted as the objective of information processing and this function necessitates related assumptions relative to the expected behavior reactions to the product of this processing and to the measurement process as well. A study of the current accounting structure necessarily requires recognition of the interrelatedness of these three structural elements of functional objective, behavioral relations, and measurement.

This conclusion has significance not only for the nature and direction of expected future progress in accounting theory formation, but also it suggests a direct point of reference to Professor Devine's article. In the manner of outline and discussion, Professor Devine has at times not only seemed to have chosen to de-emphasize this interrelatedness, but he has also offered particular suggestions which, unless this feature is recognized may encourage limits to the scope and depth of inquiry available to the researcher interested in accounting theory formation. In consequence, an undue limit might be placed on the degree of creativity

⁴ *Accounting and Reporting Standards for Corporate Financial Statements and Preceding Statements and Supplements, 1957 Revision*, American Accounting Association (Columbus, Ohio, 1957), p. 5.

⁵ This follows from the definitional elements of both statements. If the function were otherwise, efforts and accomplishments would be represented by other characteristics than costs and revenues; if the function were otherwise, realized income would not be a measure of effectiveness.

⁶ See for example, John M. Phiffner and Frank P. Sherwood, *Administrative Organization* (Prentice-Hall, Englewood Cliffs, New Jersey), p. 406.

which might otherwise be accomplished. This point of contention may be substantiated by considering some specific remarks offered in the article.

Limitations Emanating from Devine's Proposals. Under the reference "Measurement and Induction" Professor Devine states that "accounting is carried out to accomplish objectives and is therefore tinged with purpose." Later on, however, he suggests that it may be possible to abstract from the purposive aspects and fit the positive uniformities into a deductive system "... and add the welfare and ethical provisions later." It has just been noted, however, that objectives or expressed purposes dictate measurement methods. Therefore, any attempt to abstract from the purposive aspects, at least in regard to the structural area of measurement, will be restricted. This is so because measurement without purpose is meaningless in the business world. While it may be possible to abstract from the purposive aspects and consider accounting procedures as nonpurposive and fit the procedures together in a deductive system, such would be a limited conclusion since the imposed standards emanating from the welfare and ethical provisions in mind will ultimately have to be measured and communicated. Research in the area of measurement would be restricted to attempts to refine the measurement of these standards, to an examination of the internal consistency of the measurement process relative to the imposed welfare and ethical provisions. Similarly, Professor Devine's suggestions that the accounting concepts of "objectivity" and "materiality" be developed from knowledge obtained from other disciplines, where these concepts are used, will produce limited results unless certain requirements are met. These requirements would involve the divorce of "objectivity" and "materiality" from the presently assumed function of measuring

realized income—the function from which these concepts presently attain their operational significance.⁶ That is, the assumption that "objectivity" and "materiality" have a meaning separate and distinct from the accounting structure is not necessarily valid. Results of research in such a study would be limited unless the assumption is valid.

At another point in the article, under the reference *Behavioral Relations*, Professor Devine poses the questions: "How do we decide which events are to be recorded and reported and which are not . . . ? To what extent are owners influenced by reported income in making withdrawals, commitments? . . . To what extent are businessmen willing to substitute maintenance of control, stability of management groups, prestige from size or physical properties or incremental profits?" Fundamentally, if our presently conceived accounting core-structure is accepted, we have little choice in determining these answers. In the final analysis they are implicitly a part of the present accounting core-function of measuring realized income. Thus the events to be recorded are determinable from the postulated objective of matching costs and revenues and the resulting presently accepted operational definitions of costs and revenues. The extent to which owners are influenced by reported income in making withdrawals or commitments must be assumed to be substantial if the presently accepted core-function is valid. Once we accept the accounting income objective, we have decided owners are influenced by reported

⁶ The first step in the process of measurement is the determination of the objective. If it is believed for example that organizations should be adjudged according to an ethical criterion of employee development, what attributes would be measured, how would their significance be measured and reported, what measuring unit would be employed? Then what would be the appropriate concepts of objectivity and materiality and verifiability? See Paul Kircher, "The Fundamentals of Measurement," *Advanced Management*, v. 20 (October, 1955), p. 6.

income in making withdrawals or commitments. Finally, businessmen, under the imposed efficiency measurement of income, evidently rely considerably upon incremental income as opposed to other motivations, or at least this appears to be the assumption of the present core-function of accounting. If in posing these questions Professor Devine intends that possibly the answers to them are not as we have stated, one must conclude that the "fundamental purpose" of accounting has in some manner been misstated. If sufficient evidence confirms this possibility the profession would be presented, according to the current stage of accounting development as such is reflected in the discussion in the literature on the central purpose of accounting, with a methodology without a structure or meaningful purpose.

Suggested Approach to Theory Formation. At this point we might emphasize that our interpretation of the present structure of accounting theory leads us to believe that the expressed function of accounting sets a limit upon the nature and depth of inquiry into the related areas of measurement and behavioral relations. It could be suggested that the confusion, as outlined above, is really a problem of determining a starting position or point of reference from which the researcher may conduct his combined inquiries. Professor Devine appears not to hedge on the approach to this problem; for at a later stage of his discussion on welfare and normative responsibilities he states: ". . . This writer is committed to the doctrine that the *first* order of business in constructing a theoretical system for a service function is to establish the purpose and objectives of the function. The objectives and purposes may shift through time, but for any period they must be specified or specifiable." Judging from the last sentence and from the following statements to be cited, the meaning of objectives and purposes is not intended to

refer to the general functions of the discipline (e.g. to communicate and measure . . .) but rather to refer to a more specific function to serve the structure of accounting theory in a manner similar to that served by the present core-objective of determining income. He states, ". . . the profession can translate the general attitudes of society into accounting rules that will help accomplish socially desirable behavior and discourage undesirable behavior. The accepted body of accounting doctrine may, therefore, change radically from time to time, and leaders of the profession must be equipped with an understanding of social trends and changes."

Considering this proposal in light of the points of confusion we have outlined, one might conclude that these points are now reconcilable; for if the researcher takes as his point of reference or starting point this particular proposal advanced by Professor Devine, he may conduct further inquiry in a manner similar to that suggested in his article. He will merely have replaced the present core-function (income objective) with an ever-changing function. But we are not of the opinion that this proposal is the proper approach to accounting theory formation.

Reservation to the Approach. In the first place, it is a rather unusual conclusion to advance. For if the accepted body of accounting doctrine is to change radically from time to time, the profession and its members may be faced with a series of "shocks" similar to those presented to physicists when, following the disclosure of Einstein's general and restricted theories of relativity, it was noted that the "classical concepts of physics were not adequate to meet the actual situation."⁷

⁷ See P. W. Bridgman, *The Logic of Modern Physics* (Macmillan, 8th Printing, New York, 1959), p. 1; ". . . the shock of this discovery has resulted in a critical attitude toward our whole conceptual structure which must at least in part be permanent." (Italics supplied.)

Of a more serious nature, Professor Devine may be extending the view that the accounting function is basically an interpretative function—an interpretative function that must ultimately extend into the determination and imposition of the purposes of organizations operating within a society. A little reflection upon the nature of such an interpretative function, in light of the interrelatedness of the structural system, leads to the conclusion that if adopted such a function will severely limit the degree of depth and scope of research in the related structural areas. Progress in accounting theory formation will be restricted to improvements in the internal consistency of the presuppositions, principles, rules, etc. of the structural system. Research into the basic elements of measurement, communications, behavioral relations (especially decision-making under conditions of uncertainty) will be difficult to accomplish. The whole objective of accounting classifications and other disclosure techniques will be confined to a sub order geared to specific purposes rather than having its essence in the basic motivational needs of a variety of decision makers with only general purpose objectives.

In our disagreement we do not intend to imply that social goals and standards should not be given recognition by the accounting discipline. They should be, but this is essentially a problem having its solution in the reporting aspects of accounting flowing from a more basic structure. It should not be part of the basic structure. Our reservation is in the suggestion, and its implications, that the structure of accounting theory be developed from a base of shifting goals and standards.

Feasibility of the Approach. In addition to the possibility of a conceptual disagreement with Professor Devine's suggested approach, there may be some doubt as to its feasibility. Consider the related recom-

mendation that accounting "translate the general attitudes of society into accounting rules. . . ." There is the assumption here that a high degree of unanimity of acceptance of particular goals exists, whereas: "by definition a modern complex culture lacks the degree of homogeneity usual in folk and primitive communities. . . . A modern nation, for example, is a great collection of subcultures associated with social classes, territorial regions, age categories . . . and occupational interests to mention only a few. . . ."⁸ Actually an attempt to define an everchanging value system of a society does not seem a part of the accounting core-function. A value system can only be conceptualized in the form of general terms of acceptance. Accounting is not equipped to discriminate between those values which are generally accepted and those which are unique. A particular lawyer, for example, may suggest that the primary function of a corporate organization should be to make money for its owners and there should be no confusion as to the manner in which compromises of this function should be considered.⁹ On the other hand, an economist might maintain that the function of the corporate organization should be considered in terms of the social benefits emanating from the organization's operations, including perhaps stability of employment, employee development, or customer satisfaction.¹⁰ A rather recent controversy concerning broadly the organization's responsibility for employee development and more specifically the nature of the relationships of employee morale, turnover, and absen-

⁸ John Gillin, "The Application of Anthropological Knowledge to Modern-Mass Society—An Anthropologist's View," *Human Organization*, v. 15 (Winter, 1957), p. 27.

⁹ Eugene B. Rostow, "To Whom and For What Ends is Corporate Management Responsible?" in the *Corporation in Modern Society*, ed. by Edward S. Mason (Harvard University Press, Cambridge, Mass., 1960), pp. 63–64, and 71.

¹⁰ See Howard R. Bowen, *Social Responsibilities of Business Men* (Harper, New York, 1953), p. 52.

teeism, to production and other measures of economic efficiency may also be cited in disfavor of this approach; for as the controversy now stands there is first of all a disagreement as to whether the measurement of employee welfare is an ethical or self-interest matter (Blum and Likert) and secondly a disagreement as to the important variables and manner of measurement appropriate to the determination of organizational responsibility in this area (Likert and Argyris).¹¹ How the accounting discipline transcends this argument is difficult to comprehend. More significantly, however, the nature of the controversy suggests that management should have the prerogative in determining its social and economic goals, especially when disagreement over appropriateness of goals exists.

If we consider the same proposal relative to governmental institutions, i.e. city, state, and federal, our conception of the function, and therefore of the efficiency of performance, of these institutions will depend upon our social and individual values. The elected representatives of the populace charged with the administration of these institutions are presumably elected on the basis of their expressed social and individual values concerning their conception of the functions of the respective institutions and their particular duties. The members of the populace attempt to correlate their values to values expressed by one representative or another. It would only follow that the interested parties in every type of institution should be given an equal opportunity to correlate their values to those of the particular institutions under consideration.

Further, analyzing the goals of society as they are expressed and conveyed in customs and traditions and even laws is no guaranty that these expressions and conveyances represent all factions of the populace.¹² Often they represent the successful efforts of minorities who can make their

viewpoints seem as reflections of society (e.g. what social values on a national scale guide import quotas, or depletion allowances?). On the other hand, what degree of significance should be assigned to those values expressed by the majority? Do not minority interests have a social right to demand that accounting disclose information useful to them? The market price of a security of a corporation at a particular time represents a meeting point of all the diverse social and individual values—both of a short-and-long-term nature. In this respect, serving the minority in the sense of providing information is essentially serving the majority as well.

An Alternative Approach Yields Similar Conclusions. If the starting position or point of reference approach for research investigation cannot be considered to be in the proposal just submitted, perhaps the approach to progress in accounting theory formation may be accomplished by starting the inquiry in the second structural area of behavioral relations, referred to in Professor Devine's article, with the supposition that propositions developed from this area may suggest the proper accounting function.

But the feature of conflicting goals cited in the previous paragraphs may present similar difficulties in advancing this structural area as the appropriate point of reference. Under the reference *Behavioral Relations*, a suggestion is offered that significant conclusions as to the type of data to be communicated by accountants may

¹¹ See respectively, Fred H. Blum "Social Audit of the Enterprise," *Harvard Business Review*, v. 36 (March-April, 1958), p. 77; Rensis Likert, "Measuring Organization Performance," *Harvard Business Review*, v. 36 (March-April, 1958), p. 41; and Chris Argyris, "The Organization: What Makes It Healthy?" *Harvard Business Review*, v. 36 (November-December, 1958), p. 107.

¹² John Gillin, *op. cit.*, p. 27—"Many of the underlying values . . . of a modern culture seem not to be consciously and explicitly verbalized; others are verbally manipulated in a variety of ways that may be understood by persons reared in the culture"

be obtained by observing or deducing reactions to certain sets of accounting data by users of such data. But does it follow that stable patterns of behavior will be discernible? Present developments in motivation theory suggest that motivation is primarily a function of classes of needs. Although the same classes of needs may be operative in all individuals, the particular patterns of preferences of needs of individuals are conditioned materially by past experiences and vary accordingly. That is, the influences exerted by the family unit, religious training, type and depth of education, type of occupation, and class membership affect the final pattern of preferences.¹³ Furthermore, as a particular need within an individual is satisfied, it ceases to motivate, being replaced by another need at a higher level of aspiration.¹⁴ In observing the reactions of users of accounting data, how are we to determine which needs are operative and which are not in a particular case, assuming we have knowledge in advance of the patterns of preferences that do exist?

The problems referred to in the last paragraph may be illustrated by noting some types of situations in which decisions could be made from accounting data and considering how individuals might react to the accounting information. Considering first the lifo method of inventory accounting, a reaction to the disclosure of its use may be dependent upon the social values held by the user of the information. He might be displeased by the possibility that the method was adopted to accomplish tax benefits, or by the possibility that it was designed to mislead labor. Then again the reaction might be dependent upon lifo's effect upon income and the particular need circumstances of the individual. If the individual's needs are best satisfied by current income, he might be displeased if lifo reduces income available for dividends. If his current income needs

are satisfied, however, he might be pleased in the knowledge that the security of his capital has been increased through a lower liability for tax payments and lower demands for dividends. In fact, regardless of the method of measurement under dispute, the reaction to the resulting income may be considered to be affected by the need-preference of the individual in terms of current needs versus expected future needs. In a similar manner, the particular need-preferences of management could alter considerably the extent to which income is to be sacrificed for power, prestige, security, and so on.¹⁵

In any of these cases, there is no valid reason to suppose the accountant will be able to discern stable and long range patterns of behavioral reactions. Even assuming such patterns exist, they would exist only in a statistical sense and be represented in terms of broad categories. For a discipline which should be more concerned with communicating data for a variety of purposes, this does not seem particularly appropriate.

Remaining is the third of the possible areas, measurement, as the source from which an approach can be developed. But as implied earlier, measurement is too dependent upon the particular objective set forth. That is, basic research in measurement theory must have as an ultimate goal the application of the discovered concepts to the objective to be measured. It would seem that we have created a peculiar void relative to the approach with which

¹³ See for example A. H. Maslow, *Motivation and Personality* (Harper, New York, 1954), pp. 69-70 and 80-98.

¹⁴ See A. Zaleznik, C. R. Christensen, F. J. Roethlisberger, and G. C. Homans, *Motivation, Productivity, and the Satisfaction of Workers—A Prediction Study* (Harvard University Press, Boston, Mass., 1958), pp. 398-99; There is no implication within the work cited that the proposition is peculiar to workers only.

¹⁵ For some of the important variables altering management's goals, see Albert Lauterbach, *Man, Motives, and Money—Psychological Frontiers of Economics*, 2nd Edition (Cornell University Press, Ithaca, New York, 1954 and 1959), pp. 95-97.

accountants may improve upon or develop a structure of accounting theory. Such represents the case for the proposal for a new perspective on research methodology and accounting theory formation.

Alternative Broader Perspective of Accounting Theory Formation. We have advanced the thesis that interrelationships exist among three areas of inquiry and these interrelationships essentially take their form from the nature of the objective(s) set forth as the accounting function. If we express the function as a computational one (measurement of economic efficiency), limits are set upon the degree of latitude permitted in the conduct of investigation into the related areas of measurement and behavioral relations. Thus inquiry into measurement must ultimately be related to the objective of what is to be measured and the limits set by the operational requirements. The inquiry into behavioral relations would have to consist of either proving or disproving the appropriateness of the assumed objective. Off hand, from the suggestions offered by Professor Devine, one might surmise that his agreement with the assumed income-computation function is not complete, for carrying through his suggestion would require extensive modifications in statements supporting the present structure of accounting theory. And in this respect we are in agreement with Professor Devine. The current structure requires modification in order that progress in accounting theory formation may be accomplished. The answer is not in a suggestion that stipulates in essence that the *structure of theory based upon a restrictive computational function be replaced with another structure based seemingly upon a similarly restrictive computational function*. Rather research in accounting theory should be conducted from an alternative broader perspective of the accounting function; a function developed possibly from the following premises and propositions.

If progress in the social sciences is to follow the pattern of research developments in the physical sciences, we may expect widespread and rather abrupt abandonment of old concept formulations. The structure of the theory should be such as to allow and not impede this change. Whether or not accounting research has reached the stage of development requiring broad and fundamentally new concepts, we are not certain. But the stage is at such a level that no structure of accounting theory ought ever to be advanced which does not allow for such creative progress. Rather, "let there be as much variety in choice of foundation and as much fertility in the throwing-up of new hypotheses as possible."¹⁶

Light on the current state of developments in accounting theory is provided by John Kemeny's observation that, "It may be quite unfair to the social scientist to say that he has developed only the most trivial theories,"¹⁷ and his explanation of the hierarchy of the laws of motion, as developed from a historical study reveals that initially minimum level theories were first derived from experience and these then generalized into a second-level higher theory encompassing in one formulation the minimum level theories. Then the second level of theories are merged into a still higher order. "Thus we get a hierarchy of explanations, where the facts on the lowest level are explained by theories, and then each theory in turn is explained by the theories on a higher level . . ."¹⁷ It is not unrealistic to contend that the critical accounting need, toward which research should be directed, is the development of higher theories to explain the "trivial theories" now rampant in accounting literature.

This suggests, however, that the ac-

¹⁶ J. H. Woodger, *The Technique of Theory Construction* (University of Chicago Press, Chicago, 1939), p. 1.

¹⁷ John G. Kemeny, *A Philosopher Looks at Science* (D. Van Nostrand, New York, 1959), pp. 250, 167.

counting function should be viewed and developed from a more fundamental level of abstraction than that generally advanced by accountants. Such a level might be represented by the following propositions.

Inherent in the existence of an accounting function is a concept of scarcity. For the purposes of this proposal a scarcity of economic resources will be assumed though more research would be required to determine the exact nature of the scarcity concept in accounting.¹⁸ Scarcity establishes values and underlies the essence of alternative uses. These scarce resources are committed, at a point designated as the planning stage, to the accomplishment of objectives both of an intermediate and long term nature. Objectives, however, are multiple and they vary by types of organized institutions such as business, governmental, and charitable entities, as well as by individual units of a similar type. The individuals who might have interests in these various institutions are also characterized by multi-goals, and it is their aspiration to attempt to correlate their goals to the goals of the institutions of their interest.

Regardless of the purpose, when scarce resources are anticipated for commitment or are actually committed to the accomplishment of particular goals, there is a need for accounting. The accounting function therefore must transcend personal, business enterprise (including managerial), governmental and other institutional accounting, and even social accounting assuming some purpose of equilibrium is intended.

The setting of and the accomplishment of goals, however, takes place in a world of uncertainty. In this respect there is not only uncertainty that the outcomes of actions will not be as planned, but there is also uncertainty that the actions themselves, which take their form from intermediate goals, may not be appropriate to

more ultimate goals.¹⁹

For the purposes of research, it would be assumed that the accounting function involves accounting for these scarce resources which are or are intended to be committed to intermediate and ultimate goals. For the accountability to be meaningful, a structural framework needs to be developed consisting of at least the basic elements of expressed and implied goals, nature and manner of resources commitments, and the nature and degree of expected and actual results of the commitments.²⁰

This proposal leads to the following facets of inquiry which become appropriate to the accounting function. What are the natures of the organizational unit's goals as formulated by management? Is there a hierarchy of organizational goals, and if so

¹⁸ There may even be a philosophical base to the development of the concept of scarcity; thus:

When we inquire into the actual emergence of desire and its object and the value-property ascribed to the latter . . . , it is as plain as anything can be that desires arise only when 'there is something the matter,' when there is some 'trouble' in an existing situation. When analyzed, this 'something the matter' is found to spring from the fact that there is something *lacking, wanting*, in the existing situation as it stands, an absence which produces conflict in the elements that do exist. (Italics supplied.)

Dewey, John, *Theory of Valuation* (Chicago: University of Chicago Press, 1939), p. 33.

¹⁹ Based upon the element of uncertainty, it is difficult to see how the accountant can take the position of categorically asserting that the function of a unit is . . . (?); e.g. ". . . no one can prove that productivity is more or less important than worker satisfaction . . . These depend importantly on how we view life." See Pfeiffer and Sherwood, *op. cit.*, p. 412.

²⁰ To lend some validity to this proposal it may be reported that a particular research project is underway, the purpose of which is to develop the form and sets of accounting data appropriate to the reporting of corporate activities. For the project, a framework of reporting has been adopted which is based upon the premises outlined above, but supplemented by related propositions concerning corporate operations which are suggested by these premises. The framework not only suggests the appropriate information; but it is flexible enough to withstand the arguments advanced in this paper and to meet an increasingly popular test of organizational models such as suggested by the following: " . . . ultimately it makes only slightly more sense to say that the goal of a business organization is to maximize profit than it does to say that its goal is to maximize the salary of Sam Smith, Assistant to the Janitor." see R. Cyert and J. March, "A Behavioral Theory of Organizational Objectives," in Mason Haire's *Modern Organization Theory* (John Wiley and Sons, New York, 1959), p. 80.

what is the balance among goals maintained by individual organizational units (relative importance)? To what extent can the income goal serve as the super-structure of analysis for business units? In the research work cited (Footnote 20), the framework was constructed without explicit reliance upon the income goal. Rather, one of the premises adopted was that the corporate institution is more often characterized by multi-goals; and the results obtained were as rewarding as those suggested by Richard Eells, when he observed, "the modern corporation becomes more comprehensible when the diverse aims of corporate policy are examined. . . . The concept of the multifunctional role of the modern corporation would seem to offer the more rewarding hypothesis; . . ."²¹

What are the natures of the classes of motivational needs of interested parties? How can accounting facilitate the correlation of individual and organizational goals, not individually, but in terms of classes of needs? Of what importance are motivational needs of minority parties in establishing classes of universal need?

What measurement and communication techniques need to be developed to allow expansion of present accounting practice? For example, how may expectations be measured and communicated? What different measurement techniques are necessary to measure the accomplishment of non-income oriented goals which underly particular resource commitments? How may a particular interim report be designed and appropriate data selected which can communicate the past, present, and future characteristics of resource commitments so that progress toward goal accomplishment may be determined?

What report forms and what detailed sets of accounting data are necessary to communicate the complete picture of enterprise activities based on the premises outlined? How may communication theory

contribute to the performance of the accounting function?

There is somewhat of a parallel between the problems of communications relative to communication theory and those problems relative to the communications function in accounting, although this is not to suggest that a complete analogy exists. It has been suggested that the problems of communications can be recognized at three levels,²² levels A, B, and C; but these levels are not completely interdependent, and thus restrictions at one level may represent restrictions at the other levels as well. That is, the communications problems may be manifested as technical problems (level A) wherein the necessary inquiry would be in the nature of considering the accuracy of the transmission of symbols; or they may be manifested as semantic problems (level B) wherein the necessary inquiry would be in the nature of considering the precision of the transmitted symbols to convey the desired meaning; or they may be manifested at the effectiveness level (level C) wherein the necessary inquiry would be in the nature of considering how effectively the received meaning affected the conduct in the desired way. But levels B and C must make use of only those signal accuracies which turn out to be possible when analyzed at level A. Similarly, the effectiveness (level C) of the communications may also be a function of level B (the semantics) to the extent that the meaning of symbols is dependent also upon the "specific sign users in specific environments . . ."²³

If these stages are applied to the communications function in accounting, the

²¹ Richard Eells, *The Meaning of Modern Business* (New York, Columbia University Press, 1960), pp. 135 and 136.

²² Claude E. Shannon and Warren Weaver, *The Mathematical Theory of Communication* (University of Illinois Press, Urbana, Illinois, 1949), pp. 95-98.

²³ Colin Cherry, *On Human Communication* (John Wiley and Sons, New York, in association with the Technology Press of Massachusetts Institute of Technology), p. 241.

problems of communications could be represented as (a) the degree of correspondence (accuracy) with which the accounting framework parallels the actual operations of the physical system for which it is accounting (the technical problem); (b) the precision with which the symbols chosen convey the characteristics of the physical system within the framework of reference adopted (the semantics problem); and (c) the effectiveness with which the communications function is accomplished in terms of the degree to which desired action is effected (the effectiveness problem). First of all, it will be noted that the levels (a) and (b) are interdependent in the sense that level (a) determines the objects of communications for which symbols must be chosen (i.e. in the language of Ogden and Richards, the "referants").²⁴ More specifically, the technical problem in accounting would consist primarily of the determination of the objects of information which should be communicated, and these objects of information would be the "givens" at level (b) and as such would be assigned appropriate symbols (the semantics problem). With respect to level (c), presumably the task of effecting the desired action is fundamentally contingent upon communicating the characteristics of the

physical system, according to the system of symbols chosen; consequently, the effectiveness level is dependent upon certain accomplishments at the levels (a) and (b). But alternatively, the final sets of objects of information which should be communicated may be dependent upon certain assumptions at the effectiveness level—e.g. assumptions as to the general uses of the communicated objects of information—so that cycle is again actuated.

Considering the above, shortcomings noted in the communications function of accounting, some of which were indicated by Professor Devine, may represent shortcomings at each of the levels indicated, levels (a), (b), and (c). Noting, however, that the more fundamental level seems to be represented as level (a), the technical level, the conduct of inquiry into the communications problems in accounting could well initiate at this level. This is somewhat in contradiction to the more traditional approach to the study of communications problems in accounting which aim at levels (b) and especially levels (c) without first examining the effect of level (a) upon these dependent levels.

²⁴ C. K. Ogden and I. A. Richards, *The Meaning of Meaning* (Harcourt, Brace and Company, New York, 1956), p. 90.

THE JOINT FINANCIAL MANAGEMENT IMPROVEMENT PROGRAM IN THE FEDERAL GOVERNMENT

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THE Joint Financial Management Improvement Program is a cooperative and constructive effort of Federal agencies to bring about needed improvements in budgeting, accounting, and other financial management practices in the Federal Government. The broad overall objective of this program is to promote better management and greater efficiency and economy in Federal Government operations and better financial information for the public as to those operations.

The existence of a program with such far-reaching objectives is a matter of interest and concern not only to administrators, officials, and employees of Government agencies, but to all segments of the public who are affected by Government operations. Such a program may be assumed also to be of direct interest to the various segments of the accounting profession—public accountants, industrial accountants, government accountants, and educators—all of whom have a stake in the contributions that accounting and related financial management functions can make to the biggest enterprise of all—the United States Government. The purpose of this paper is to provide a description of the nature, purpose, and basic concepts of this program and a recitation of some of its accomplishments and problems.

ESTABLISHMENT OF PROGRAM

The program was officially organized in 1948 under the leadership of the Comptroller General of the United States, the Director of the Bureau of the Budget, and the Secretary of the Treasury. It was set up as

a joint cooperative program of all Government agencies for improvement in accounting and related financial management practices. Statutory recognition of the program came in 1950 when the Congress, in enacting the Budget and Accounting Procedures Act of that year, stated as one of its policies that the above three officials should "conduct a continuous program for the improvement of accounting and financial reporting in the Government."

The program was originally named the Joint Program for Improving Accounting in the Federal Government because of the initial emphasis on accounting improvements. In 1959, its name was changed to the Joint Financial Management Improvement Program, not because of any essential change in the nature of the program but to adopt a name more indicative of its scope. The objectives of better program planning, budgeting, accounting, and financial reporting, the proper coordination of these functions, and the encouragement of strengthened internal financial management controls were a part of the program from the beginning.

In describing this program, an understanding of the meaning of the term "financial management" is desirable. In recent years, this term has been used to an increasing extent, particularly in the Federal Government, to refer to that part of total management which is primarily concerned with the obtaining and administration of financial resources needed in carrying out operations and to include the related functions of budgeting, accounting, and financial reporting. The boundaries of

the various functions performed under the general heading of "financial management" are not always sharply defined, nor are they necessarily the same between different organizations. As generally used, the term embraces the group of functions usually identified in industry under the heading of "controllership."

REASON FOR PROGRAM

Why is such a program necessary?

As a matter of history, the machinery of a joint, cooperative program evolved as a workable mechanism for identifying, studying, developing, and stimulating needed improvements in its particular field, insofar as the numerous and diverse agencies and programs of the Federal Government were concerned.

During the years of the vast expansion in the size and scope of Federal Government operations, starting about 30 years ago, necessary and desirable changes in financial management practices did not keep pace with such expansion, nor with changing concepts and methods. The financial management concepts and methods of an earlier day, when Government operations were smaller in size and less complex, became outmoded and were no longer adequate or suitable. Although exceptions existed, agency accounting, for example, followed rigid patterns and was performed mainly to meet requirements imposed by the central fiscal agencies rather than adapted as necessary to the needs and purposes of the operating agencies. Accounting was essentially a means of evidencing fiscal accountability and compliance with legal limitations. Over the years, a vast network of overlapping and duplication of accounting, checking, and reporting processes and requirements had grown up which contributed almost nothing to efficiency and provided little effective financial control.

The joint cooperative program approach

was adopted as a means of promoting and achieving needed modernization, simplification, and other improvements. It provided an effective way of studying and initiating needed changes in laws and practices and minimized the problem of jurisdictional conflicts in authority and responsibility between various agencies.

This machinery is still considered to be an effective method of focusing attention on and stimulating continuing efforts to develop the best and most efficient financial management procedures for the far-flung and varied activities of our national Government.

BASIC PURPOSES AND OBJECTIVES

The basic purpose of the joint program is to achieve improvements in budgeting, accounting, financial reporting, and other related financial management practices throughout the Government wherever a significant need exists. Changes for the better may affect a single agency or they may have a Government-wide effect. The underlying objective of such improvements, of course, is to promote better management and thereby to obtain greater efficiency and economy in performing Government functions and operations.¹

With particular reference to accounting, the intention has always been to develop this function in all agencies of the Government so it will serve essentially the same purposes expected of accounting in well-run private business organizations. These purposes include serving the management by providing prompt and significant cost information on carrying out assigned activities; by supplying a basis for making estimates of the cost of future operations;

¹ The pamphlet entitled "The Joint Program for Improving Accounting in the Federal Government," published in May 1958 jointly by the Bureau of the Budget, the Treasury Department, and the General Accounting Office, describes in greater detail the scope, objectives, concepts, and methods of operation of this program.

by furnishing a measure in financial terms of performance for comparison with planned objectives; and by providing the basic information needed to disclose fully —through periodic reports to higher management levels as well as to the public—current financial status and results of operations.

SPECIFIC OBJECTIVES IN INDIVIDUAL AGENCIES

Some of the specific improvement objectives being sought in the financial management systems of individual Government agencies are:

1. Strengthening of agency organization and staff resources.
2. Development of effective and useful agency accounting systems on an accrual basis.
3. Establishment of budgeting methods and practices based on use of cost data.
4. Simplification of agency appropriation and allotment structures, and development of effective methods of control of appropriations, funds, obligations, expenditures, and costs.
5. Development and use of consistent classifications for program planning, budgeting, accounting, and financial reporting.
6. Establishment of effective internal management control practices, including internal audit.
7. Integration of agency accounting and financial reporting with the requirements of the national budget process and the central accounting and reporting operations of the Treasury Department.
8. Development of accurate, useful, and periodic financial reports on agency programs and activities which clearly disclose financial status and results of operations, including cost of performance of assigned functions.
9. Education of agency officials and employees in the proper use and benefits to be derived from maximum utilization of these management tools.

LEADERSHIP ROLE OF THE CENTRAL AGENCIES

While all agencies of the Government are considered to be participants in the

program, leadership is provided through the central agencies, the General Accounting Office, the Bureau of the Budget, and the Treasury Department.

Each of these agencies has specific responsibilities under various laws relating to financial management in the Government. The Bureau of the Budget has basic responsibilities for the formulation and execution of the Federal budget and for promoting efficient and economical management of executive branch agencies. The Treasury Department has defined responsibilities for over-all accounting and financial reporting. The General Accounting Office has accounting as well as independent auditing and investigative responsibilities extending to all Federal agencies.

The steering committees

At the present time, the leadership of the three central agencies is exercised through two steering committees. One committee is concerned with the civil agencies and with Government-wide problems. The second committee, which includes a Department of Defense official as a member, is concerned solely with financial management problems in the Department of Defense. The function of these committees is to identify and study problem areas, to promote corrective courses of action, to plan the carrying out of jointly staffed projects where needed, and otherwise to keep in constant touch with agency developments and needs to stimulate continuing improvements.

ACCOMPLISHMENTS

When the program was started back in 1948, a great many problem areas were readily identifiable and susceptible of immediate study and improvement effort. As a result, numerous projects were undertaken almost simultaneously by or under the leadership of the three central agencies. Important and significant changes in fi-

nancial procedures and practices were brought about. Examples of major accomplishments are described below.

Replacement of warrant system

The old warrant system, which antedated the adoption of the Constitution, was replaced with modern simplified procedures for handling the receipt and disbursement of public funds. The old system required the processing of warrant documents for almost all kinds of transactions affecting public funds and was characterized by cumbersome procedures and voluminous paperwork. The new procedures resulted in significant simplifications and related economies in all agencies.

Abolishment of GAO Accounting and Bookkeeping Division

The Comptroller General abolished, in 1950, the former Accounting and Bookkeeping Division of the General Accounting Office. This division had been maintaining thousands of ledger accounts for appropriations, expenditures, limitations, receipts, public debt transactions, and accountability of disbursing and other accountable officers. These accounts were posted from millions of documents and reports required to be submitted by the various agencies of the Government. The elimination of this division was made possible, with no loss in control, by the development of the simpler, more direct, and more economical procedures for establishing and verifying fiscal accountabilities resulting from such changes as extension of the GAO audit processes directly to the accounts of the Treasury and better fiscal procedures in individual agencies. The financial result of this change was an annual saving of \$1 million in the operating costs of the General Accounting Office plus the unmeasured benefit resulting from eliminating the requirement for individual

agencies to prepare and send large numbers of fiscal documents into the General Accounting Office.

Central accounting improvements in Treasury Department

Related to the above changes, the central accounting operations of the Treasury Department were substantially reorganized and simplified. These changes resulted in identifiable savings of \$1 million a year in that Department over and above the savings in other Government agencies as a result of simpler procedures. Significant improvements were also made in the Treasury's financial reporting operations.

Transfer of bookkeeping operations from GAO to Post Office Department

The detailed bookkeeping operations of the former Postal Accounts Division of the General Accounting Office were transferred in 1950 to the Post Office Department which then assumed responsibility for establishing and maintaining its own system of accounting and related internal control. At the time of this change, the GAO Postal Accounts Division had about 800 persons engaged in bookkeeping and related operations applicable to the Post Office Department's operations. The required legal authority for this change was granted by the Post Office Department Financial Control Act of 1950.

Revised postal money order system

A modernized postal money order system was installed in 1951, using a punched card money order form in lieu of the old papertype form which was written and processed by hand. The new system resulted in the elimination of millions of documents each year, a savings in costs estimated at the time at \$6 million a year, and better service to the public.

Modernization of Treasury check payment and reconciliation operations

The operations of paying and reconciling checks drawn by Government disbursing officers on the Treasurer of the United States were reorganized beginning in 1956, after several years of development work. These operations were formerly carried out in the Treasury Department, the Federal Reserve banks, and the General Accounting Office. Under the new plan, these operations are concentrated in the Office of the Treasurer of the United States in Washington. Effective use is made of the mass data processing capabilities of modern automatic equipment to handle the annual volume of over 400 million U. S. Government checks. Recurring savings from this change are estimated at about \$3 million a year.

Cost-based budgeting

Significant progress has been made in converting budget requests to the Congress to a basis which discloses the cost of performing the activities for which appropriations are needed. This practice is in contrast to presenting budget requests solely in terms of new obligations for materials and services to be incurred during the new year.

The increase in the number of cost-based budgets is an indicator of progress in the capability of agency accounting systems to produce cost data for budget and management purposes—an important objective. For the 1961 budget, 56 percent of the number of appropriations requested were presented on this basis. These presentations related to programs that result annually in budget expenditures of over \$33 billion (total estimated budget expenditures for 1961—\$80 billion). By way of comparison, the 1957 budget contained 4 presentations on a cost basis.

Reduction in financial management personnel

An indication that continuing improvements in financial management functions in the Government can result in increased effectiveness at lower cost may be obtained from a comparison of personnel employed in financial management work at different dates. A congressional committee studied this aspect about 3 years ago by comparing the number of employees engaged in these functions at June 30, 1950, and at June 30, 1957. Its report² observed:

"During the period 1950-57, or since enactment of the Budget and Accounting Procedures Act of 1950, departments and agencies, exclusive of the Department of Defense, were able to achieve a reduction of 15.4 percent in personnel performing financial management functions. It is significant that, in a number of instances, reductions were made in financial management personnel through more effective systems and procedures despite level or increased program activities of the departments and agencies."

The numbers of employees on which the committee's reported reduction were based were as follows: 39,644 at June 30, 1950, and 33,552 at June 30, 1957, a decrease of over 6,000. In terms of dollars, this reduction represented an annual saving of over \$30,000,000 in salary costs alone. The committee was unable to obtain comparative figures from the Department of Defense for its study.

New legislation

The Congress of the United States contributed in a significant manner to the accomplishments achieved under the joint program by enacting important new legislation based on modern concepts of financial management. Concurrently, many

² Report of the Subcommittee on Manpower Utilization of the Committee on Post Office and Civil Service, House of Representatives, "Study of Manpower Utilization in Financial Management Functions in the Federal Government" (House Report No. 2512).

long-standing but outdated laws were repealed. Important among the new laws were the following:

The Federal Property and Administrative Services Act of 1949 designed to simplify the procurement, utilization, and disposal of Government property.

Title IV of the National Security Act Amendments of 1949, having as its objective the promotion of economy and efficiency through establishment of uniform budgetary and fiscal procedures and organizations in the Department of Defense.

The Post Office Department Financial Control Act of 1950, enacted to provide improved procedures for financial control of the Post Office Department.

The Budget and Accounting Procedures Act of 1950 which restated congressional policies in this field. This act was the first comprehensive law on budgeting, accounting, auditing, and reporting since the Budget and Accounting Act, 1921. It not only provided statutory recognition of the joint program by the Congress, but it clarified accounting, auditing, and financial reporting responsibilities in the Federal Government and gave the central fiscal agencies the legal authority they needed to bring about desirable simplifications in procedures which were not otherwise possible under previously applicable laws.

Public Law 863-84, passed in 1956, which amended existing budget and accounting laws to provide specifically for accrual accounting, cost-based budgeting, and other improved practices by Government agencies.

Accounting principles and standards

Another important milestone, reached in 1952, was the issuance by the Comptroller General of a comprehensive statement of accounting principles and standards to be observed by the executive agencies. This action, which was in accordance with one of the specific requirements of the Budget and Accounting Procedures Act of 1950, reflected one of the basic concepts of the joint program. From its beginning the philosophy of the joint program was to encourage each agency to take the initiative and responsibility in solving its own accounting problems and developing improved methods tailored to its specific

needs and operations. Under this type of approach, the Comptroller General, rather than prescribing standard systems, would then exercise his prescribing authority in terms of broad principles and standards, after consulting with the Secretary of the Treasury and the Director of the Bureau of the Budget concerning their accounting, financial reporting, and budgetary needs.

This approach may be contrasted with that which preceded the joint program. Then, uniform charts of accounts and uniform methods of recording transactions throughout the Government were emphasized. Control procedures established through the central fiscal agencies on the basis of duplicate recordkeeping represented the principal effort at internal control within the Government over financial transactions. Encouraging the adaptation of accounting methods and internal management controls to specific needs of individual agencies was not the guiding philosophy of the time.

The soundness of the current approach of prescribing requirements in terms of broad principles has never been seriously questioned. Under it, numerous agencies carrying on diverse programs can develop accounting systems which meet management and other essential requirements without being constricted into an inflexible pattern of fiscal procedures which do not fit individual circumstances.

Individual agency accomplishments

An adequate recitation of the accomplishments of individual Government agencies under this program which would do justice to them all is not practicable. The degree of accomplishment has varied greatly between agencies. While it is recognized that much more remains to be done throughout the Government, nevertheless, substantial and significant improvements in many agencies have been

made over the span of the past 12 years as is attested by the annual published progress reports on this program.

Since inception of the program, the practice has been followed of publishing an annual report of progress and other developments under the program for the information of all Government agencies, members of Congress, and the public. These reports are released jointly by the Comptroller General, the Director of the Bureau of the Budget, and the Secretary of the Treasury. The latest report, issued in November 1960 and covering the fiscal year ended June 30, 1960, presents a resume of significant financial management developments of a Government-wide nature and summaries of the status, accomplishments, and future plans for financial management improvements of individual Government agencies.

SHIFT IN PROGRAM APPROACH

After several years of operation and development of some major changes, it came to be generally recognized that there was need for individual Government agencies to develop more definite improvement plans under reasonable time schedules so as to provide a means of focusing attention on specific problem areas in need of continuing effort. Recognition of this need also became important following the action of the Congress in 1956 in passing Public Law 84-863 which embodied certain recommendations of the second Hoover Commission and provided specifically for accrual accounting, cost-based budgeting, and simplification of allotment practices by Government agencies.

Another recommendation of the Commission—one that did not require legislative action—called for strengthening the organization and operations of the Bureau of the Budget to enable it to more effectively meet its responsibilities for stimulating improvements in accounting in the

executive branch of the Government. The Bureau took steps to accomplish this purpose.

In line with the recognized need for a shift in the manner in which the joint program operations would be carried out, one of the actions taken by the Bureau in 1956 was to request each executive agency to formulate definite plans for carrying out the objectives of Public Law 84-863 and other needed improvements.³ Since that time, these plans have provided the focal point for central agency attention under the joint program for encouraging improvements in individual agencies.

SOME CURRENT PROBLEMS

Some of the problems receiving attention today under the joint program may be described briefly.

Approval of accounting systems

One of the measures of achievement in financial management practices is the approval of an agency's accounting system by the Comptroller General. Under the Budget and Accounting Procedures Act of 1950, the Comptroller General is required to approve agency accounting systems when he deems them adequate and in conformity with the principles, standards, and related requirements for accounting prescribed by him—a responsibility vested in him by the same law.

A great deal of work has been done by individual agencies of the Government in improving and modernizing their accounting systems. However, the number and kinds of agencies which have so far achieved the distinction of an approved accounting system make it quite evident

³ Bulletin No. 57-5, dated October 10, 1956, to Heads of Executive Departments and Establishments, entitled "Improvement of Financial Management in the Federal Government."

that a tremendous task still lies ahead in further development of agency systems to a point where, within the bounds of reasonableness and practicability, they conform to the principles and standards prescribed by the Comptroller General.

As of June 30, 1960, and referring only to the civil departments and agencies of the executive branch of the Government, there were about 125 agencies, consisting of subdivisions of regular departments plus independent agencies, for which separate accounting systems were in operation and therefore subject to review and approval. Less than one third of these systems had been approved in their entirety although parts of 17 other systems (e.g., payroll systems, property accounting, etc.) had been approved.

In the Department of Defense, the only complete accounting system approved so far is that covering the civil functions of the Army Corps of Engineers. Parts of systems have been approved in other instances (for example, various pay systems).

The number of approvals given to date does not tell the whole story. Some of them were issued in the earlier years of the joint program. With the enactment of new legislation and the development of more refined principles and standards, some of the approved systems require reexamination. Also, although several of the approved systems are applicable to large and complex programs, the greater number of approvals pertain to small agencies.

These various factors are indicative of the great accounting systems task still remaining. Persistent effort at improvement and adjustment to almost continually changing conditions are called for on the part of the agencies responsible for developing their systems. Thereafter comes the review for conformity with prescribed principles and standards as a preliminary to approval action.

The accrual basis of accounting

The traditional method of accounting for Government activities has been the so-called cash and obligation basis under which transactions are recorded generally on the basis of orders issued or commitments for goods and services and disbursements in payment for them. This method evolved for governmental accounting because of the initial primary emphasis on legal accountability for appropriations made by the legislative authority. At the outset, there was little recognized need for additional financial data developed on an accrual basis which would fully and fairly disclose costs incurred, resources on hand, and liabilities owing.

With the expansion in size and diversity of Federal Government activities came recognition of the need for better financial information to assist in the management control and review of such operations. The generally recognized method of accumulating significant and accurate financial information in accounts—the accrual basis—then became a focal point of attention in accounting in the Federal Government. From the beginning of the joint program, it was recognized as one of the practices to be encouraged wherever appropriate. The first Hoover Commission recognized its value in 1949. The Budget and Accounting Procedures Act of 1950 contemplated that agency accounts would be maintained on this basis. The initial statement of principles and standards of accounting prescribed by the Comptroller General in 1952 provided for its use. The second Hoover Commission recommended flatly that "Government accounts be kept on the accrual basis to show currently, completely and clearly all resources and liabilities, and the costs of operations."⁴ This recommendation was adopted by the Congress in 1956

⁴ "Budget and Accounting," A Report to the Congress by the Commission on Organization of the Executive Branch of the Government, June 1955, p. 38.

in Public Law 84-863 which incorporated the Commission's wording almost verbatim.

Hence, there is no real question as to the applicability of this method of accounting in the Federal Government. There are serious questions, however, as to the degree of application.

In day-to-day operations under the joint program, Government agencies are advised that the degree to which the accrual basis would be applied should vary with the kind of operations conducted and with the significance and materiality of the items in question in relation to the needs of management for accrual or cost information. At a minimum, costs should be developed by organization units and budget activities, and this may be done on a periodic basis. The objective is to apply accrual methods to the extent the additional information obtained will be more useful to agency management and provide better disclosure of financial status and operating results to the various levels of management in the Government. Thus, there are no exemptions from accrual accounting requirements under current standards, but there is recognition of a need for varying degrees of application in individual agencies.

Although the recitation of general requirements in these kinds of terms is relatively easy to do, difficult questions of applicability have arisen in many agencies. The difficulty in resolving these questions in terms that are agreeable to all parties concerned has hampered accounting systems improvement work in some cases resulting in deferments of approvals of accounting systems pending further studies of the factors involved. A full discussion of the problem of applicability is not appropriate here but it is the kind of problem that may be assumed to be of technical interest to accountants in all fields.

Central accounting in the Treasury Department

An important benefit of the joint program type of operation is that it provides workable machinery for getting things done about problems on which strong differences of opinion may exist. For example, opinions can understandably vary as to the desirability and usefulness of existing practices and the possibilities of simplification, modernization, or increased efficiency and economy. A current instance relates to the effort being made to eliminate duplication in detailed account keeping between the Treasury Department and some of the individual agencies of the Government.

While substantial improvements and refinements had been made by the Treasury in its central accounting operations, the second Hoover Commission focused attention in 1955 on the desirability of further effort at improvement when it recommended that a study be made to determine what could be done to eliminate such duplicate accounting. The Commission was referring to that part of the Treasury's system of maintaining detailed accounts for appropriations for which accounts were also maintained by the agencies to whom the appropriations were made.

General agreement was expressed as to the objectives of the Hoover Commission recommendation. However, difficulties were encountered in reaching agreement on actually launching a study. In 1959, arrangements were finally concluded for a public accounting firm to make the study. Its report contained recommendations for simplifying the accounting processes. The report was studied thoroughly, a course of action was agreed upon, and the Treasury initiated tests as a basis for developing specific procedures for carrying the basic recommendation into effect. The results of

this testing, which involved the promptness and reliability of financial information reported by individual agencies which use the Treasury disbursing system, were evaluated, and revised procedures will be placed in effect for the fiscal year 1961. The new procedures will have the effect of reducing the duplication of account keeping and clerical work that previously existed. Such an accomplishment is always a constructive step in the direction of greater efficiency and economy.

Agency use of cost-based budgeting practices

One of the important objectives of the joint program is to stimulate the development of reliable cost data for agency management use in carrying out agency operations.

Encouraging greater use of cost information as one of the means of promoting efficient and economical management in the Government has been a prominent objective of the joint program from the beginning. The use of cost information in the budget processes for requesting appropriations and for administering and operating agency programs was prescribed by the Congress in 1956 when it enacted Public Law 84-863.

These desirable objectives and requirements have been recognized for years, and some progress has been made in some agencies in the utilization of cost data in internal administration and agency program management. However, much remains to be done in perfecting techniques and bringing about greater utilization of cost data.

One of the steps which has been identified as needed in advancing this technique is the development of recognized standards or criteria for the guidance of individual agencies in developing and applying internal cost-based budgeting techniques for improved management control over re-

sources, including funds, and over costs and performance. No generally accepted and well understood criteria of this nature now exist. Furthermore, wide experience is lacking as a basis for developing fundamental principles for successful operation. Nevertheless, preliminary work on a project of this kind has been started by the Bureau of the Budget and it is hoped the criteria which will eventually be published will be of assistance in furthering the best use of cost data in day-to-day management.

THE DEPARTMENT OF DEFENSE

In this brief review of an improvement program which is Government-wide in nature, specific reference to the Department of Defense cannot be avoided. In the vast scope of operations of the Federal Government, this agency, including the military departments of the Army, the Navy, and the Air Force, stands out as quite vast in itself. In terms of size, diversity of functions, range of complexity, and world-wide scope of operations—to say nothing of the basic importance of its mission to our national security and way of life—we have no counterpart to this organization anywhere else.

Budget expenditures of the Department of Defense for the fiscal year 1960 were about \$44 billion—57 per cent of the total national budget of over \$77 billion. Its resources in the form of tangible property and materials and supplies are estimated to be over \$150 billion. In addition to military personnel, it has over a million civilian employees. Its operations, personnel, and physical resources are spread all over the world.

All these are indicators of bigness and provide a glimpse at the exceedingly difficult problem of devising and making work a modern financial management system. The story of these problems, the

efforts being made to introduce effective improvements, and the degree of success and progress of these efforts is a long story in itself and is beyond the scope of this paper. It is important to recognize, however, that the Department of Defense has an identified financial management improvement program and that, slowly and as time goes on, changes are being introduced which represent steps in the direction of improvement and closer conformity to the various standards prescribed by the Congress when it enacted various laws applicable to the financial management of Government agencies.

APPLICABLE STANDARDS AND AGENCY RESPONSIBILITY

These standards, enacted on behalf of the taxpayers and the public for observance by agencies of the Federal Government, extend to such matters as full accountability for and control over resources; full disclosure in financial terms of discharge of responsibilities; planning and budgeting in terms of costs; and the use of all appropriate financial management tools to promote the carrying out of authorized activities effectively, efficiently, and economically.

Sheer size of operations themselves can be an important deterrent to changes designed or intended to promote efficiency and economy. The inertia of plain bigness has to be overcome. Problems of changing programs, changing technology, shifting emphasis, organizational conflicts, personnel changes, the natural human resistance to change—all have a bearing on the effort to improve. Nevertheless, while perfection is not a practicable goal, improvements designed to minimize waste and to promote more effective services for the public's money can be made in almost all agencies.

The installation and operation of effective systems of financial management are

agency management responsibilities. Although the three central agencies in the joint program can provide leadership, advice, and some stimulus to the making of improvements in financial management practices, effective progress itself depends upon the agencies directly concerned and must come primarily from the efforts of those agencies. Such progress requires recognition of needed changes and taking the necessary steps to make them.

OTHER PRESSURES TOWARD IMPROVEMENT

Besides the joint program effort, other pressures are present which have the effect of promoting desirable changes in financial management practices of Government agencies. These include (1) the inherent drive of management officials, at varying levels, to do a good job, (2) internal and external audit, investigative, or other review operations, (3) congressional interest in agency operations, (4) the effect of public disclosure of waste, impropriety, or other deficiency in the manner in which agency's responsibilities are carried out, and (5) over-all national budget considerations.

These factors exist in varying degree in all agencies of the Government. As in so many fields of human endeavor, no single, uncomplicated effort can provide all the cure needed. The Joint Financial Management Improvement Program is a highly useful and successful effort in the Federal Government, but it is recognized to be but one of several ways of promoting better management of Government operations.

CONCLUSION

In the field of financial management in the Federal Government a great deal remains to be done in bringing about needed improvements so as to more closely attain the various objectives expressed by the Congress on behalf of the public. These objectives, in broad terms, run to better

management, greater efficiency and economy in Government operations, and better disclosure of the financial results of the operations carried out by Federal Government agencies. Some time ago, the Comptroller General was asked when the joint program would be completed. The answer given at the time was "Improvement in accounting is never completed. I think the Joint Program is a continuing cooperative effort which should go on indefinitely. We will never be entirely satisfied."

The joint program is one important mechanism for promoting improvements in the direction contemplated by law and good management and it continues to serve the public interest and the taxpayers by providing a pressure for continuous effort and attention to better financial management practices.

The circumstances which led to the

evolution of this joint program are not necessarily peculiar to the Federal Government. The review, evaluation, and revision of outmoded fiscal practices is a continuing need in all organizations in order to meet the requirements of good management. The mechanism of a cooperative and constructive improvement program conducted jointly by several organizational units directly concerned in such practices has had considerable success in the Federal Government. Although jurisdictional responsibilities for financial management functions may vary considerably, the same general approach, however, may be appropriate in other public organizations, such as state and municipal governments, as one means of focusing attention on needed improvements and stimulating action on those needs.

ECONOMIC AND ACCOUNTING CONCEPTS OF INCOME¹

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IN RECENT years, discussion of the measurement of income has been largely colored and dominated by problems created by changes in the value of money. Serious as these problems are, they are really secondary ones, for they presuppose some basic agreement about the nature and measurement of income during a period of stable prices. Between accountants and economists, it need hardly be said, no such agreement exists. My purpose in this paper is first to examine these differences—a task which has been performed, with greater or less thoroughness, many times before—and then to consider the only attempt known to me to work out a concept of income which would, like the accountant's, be capable of practical use and yet would stay close to the fundamental definition of income with which we begin. The attempt at reconciliation to which I refer is Sidney Alexander's concept of variable income, put forward in his monograph, "*Income Measurement in a Dynamic Economy.*"² Alexander's suggestion deserves more discussion than it has received hitherto, whether we finally judge it to be a workable concept or not. It is for that reason that I shall have something to say about it here. My conclusion about the practical utility of the concept, as a matter of fact, will be adverse; and from that disappointing conclusion I am led on to the view that the time has come to develop other and more effective tools to do the jobs which periodic income so signally fails to do in the field of financial planning and control. As I shall suggest, there are signs that the central position which income occupies in accounting is already being usurped.

USEFULNESS OF THE INCOME CONCEPT

Any discussion of competing ideas of income ought, I think, to start with the question: "Do we really need an income concept, and if so, what for?" Only when we have asked and answered this question can we say whether there is anything we need to define, and whether one or more than one concept of income is necessary.

Let us consider income for taxation purposes first. It is really rather remarkable that income has become so universally accepted as a good measure of taxable capacity, for on closer inspection it seems to have grave defects. Command over capital resources would seem to be a much fairer guide to the subject's ability to pay taxes, and also to the demand made by the individual on various governmental services such as defense and law and order. Alternatively, as suggested by Mr. Kaldor, it might be more sensible to tax people according to what they spend rather than on what they earn. This is not a plea for the substitution of indirect for direct taxation, of course, but for the use of a computation of expenditure rather than of income as the basis of taxation. It is not necessary to go into this matter here. For my purpose, it is enough to note that our system of direct taxation could get along quite well, and, indeed, perhaps better, if we did not have a concept of income at all.

¹ This paper was presented at the Northeast Regional Meeting of the American Accounting Association at the Massachusetts Institute of Technology on October 28-29, 1960.

² Published as the first of *Five Monographs on Business Income* by the Study Group on Business Income, 1950. Alexander's work in a slightly revised version, will shortly be republished in the 2nd edition of *Studies in Accounting*, to be edited by W. T. Baxter and Sidney Davidson.

A second important purpose which the concept of income is said to serve is in the determination of corporate dividend policy. So long as dividends are paid out of income and not otherwise, it is asserted, the rights of creditors will not be prejudiced by the return of capital to stockholders. If this means, as it does in certain jurisdictions, that currently or recently earned net profits may be distributed without making good earlier losses of capital, it is clear that the rights of creditors are being very imperfectly protected. The payment of a legal dividend by no means implies, in such circumstances, that the stockholders' capital is intact. Moreover, a corporation may earn a profit and yet be too short of cash to be able to pay a dividend without endangering its short-term solvency. The existence of current net income, therefore, may tell directors nothing about the dividend policy they ought to follow. It makes much more sense for the law to require, as it sometimes does, either that stockholders' capital should be intact before a dividend is paid out of any excess, or to require some defined margin of assets over and above those necessary to pay creditors claims, before allowing the payment of dividends to stockholders. Either type of restriction is more effective in protecting the rights of creditors than one based on an income concept, while at the same time being free of the difficulties of defining and measuring net income.

A third major need served, or said to be served by the concept of income, is as a guide to investment policy. Prospective investors seek to maximize their return on investment, and their search will be guided by the income earned on existing investments. This is related to another argument—that income provides the best measure we have of success in the management of business enterprise in a competitive economy. These are important needs, and they both point in the same direction. That

investment is most attractive which offers us the greatest present value of future receipts per dollar invested, when discounted at the going rate of interest, and in so far as historical data can help us in the choice of investments, it will be data about the growth in present value of existing investments. Again, that manager is most successful who, during a given period, increases the present value of the enterprise entrusted to him proportionately the most. In both of these cases, it is growth in present value which alone appears to be significant; and since it seems to carry out the function generally attributed to income, growth in present value must be what we had better understand income to mean.

ECONOMIC INCOME

The concept of income to which we have been led corresponds of course, to Hicks's definition of income. For an individual, he defines income as the maximum amount a man can consume in a period and still be as well off at the end of the period as he was at the beginning. There is no doubt that when, as individual salary-earners and investors, we think of our personal income for a year, we commonly do not think of it in this way, but rather as a stream of pro-rated receipts, unaffected by any changes in the value of the tangible assets with which we started the year and certainly as having nothing to do with any change in our future prospects—in our "goodwill," in other words—which may take place during the year. But this does not lead me to conclude that "the income of a person or other entity is what he believes to be his income, . . ."¹³ for we can be mistaken about the nature of income just as men were once mistaken about the nature of combustion when they attributed it to phlogiston.

¹³ "Scope and Method of Theory and Research in the Measurement of Income and Wealth," by Myron J. Gordon (THE ACCOUNTING REVIEW, Oct. 1960), p. 608.

ton. Rather, I would say "Income is as income does."

If we take Hicks's definition of income as applied even to an individual, it is easy to see, however we define our terms, income in Hicks's sense and income as the accountant measures it will only by accident ever be the same thing. As Hicks points out, the difficulty about his definition is in saying what we mean by "being as well off" at one date as at another. He offers us three different measures of well-off-ness, which, however, come together, if we abstract from changes in the value of money and from changes in the rate of interest, to give us a single measure of well-off-ness command over money capital. If we accept constancy of money capital as representing constancy of well-off-ness, then income in Hicks's sense becomes the amount by which the individual's net worth has increased during the period, due allowance being made for the value of what he has consumed or given away during that time.

To use Hicks's definition for the income of a business entity rather than for that of an individual, we need only modify it slightly; the income of the business, whether it is incorporated as a separate legal entity or not, is the amount by which its net worth has increased during the period, due allowance being made for any new capital contributed by its owners or for any distributions made by the business to its owners. This form of words would also serve to define accounting income, insofar as net accounting income is the figure which links the net worth of the business as shown by its balance sheet at the beginning of the accounting period with its net worth as shown by its balance sheet at the end of the period. The correspondence between the two ideas of increased net worth is, however, a purely verbal one: for Hicksian income demands that in evaluating net worth we capitalize

expected future net receipts, while accounting income only requires that we evaluate net assets on the basis of their unexpired cost.

It is hardly open to question that you cannot really assess the well-off-ness of an enterprise by aggregating the costs, or the unexpired costs, of its assets and deducting its liabilities. Any differences between the current value of its tangible assets and their book value based on cost will be excluded; and any value which the enterprise may have over and above the value of its tangible assets will also be excluded. We may sum up the relationship between these two different concepts of increase in net-worth, economic income and accounting income, by starting with accounting income and arriving at economic income thus:

Accounting income

- + Unrealized changes in the value of tangible assets which took place during the period, over and above value changes recognized as depreciation of fixed assets and inventory mark-downs,
- Amounts realized this period in respect of value changes in tangible assets which took place in previous periods and were not recognized in those periods,
- + Changes in the value of intangible assets during the period, hereafter to be referred to as changes in the value of goodwill
- = Economic income.

THE REALIZATION PRINCIPLE

Obviously the main difference between these two income concepts lies in the accountant's attachment to realization as the test of the emergence of income. The Study Group on Business Income, in its 1952 report, rather surprisingly suggested that "the realization postulate was not accepted prior to the First World War,"⁴ and supported this with quotations from both American and British sources. It seems to me, on the contrary, that the

⁴ *Changing Concepts of Business Income* (Macmillan, New York, 1952), p. 23.

trend has, for a long time now, been away from, rather than towards, placing emphasis on the importance of realization. For a long time the relationship of income to capital was likened to the relation of the fruit to the tree. Just as there was no difficulty in separating the crop from the tree, so there need be no difficulty in distinguishing income from the capital which produced it. It was in line with this thinking that, for the first thirty-six years after Peel had re-introduced the income tax in Britain in 1842, no relief was given by the British tax code for the using up of fixed assets in the course of carrying on a business. The introduction of income tax depreciation allowances in Britain in 1878, and their growth in importance there and here since then, constitute a movement away from the idea that you can evaluate the fruit without giving thought to the value of the tree—that realized profits can be measured in disregard of what have sometimes been called "mere value changes" in the assets of the business. Another earlier step away from the pure realization principle was the "cost or market-price" rule for valuing inventory. You will not find this in accounting literature before the mid-nineteenth century, for before that time consistent valuation at cost seems to have been the rule. The recognition of unrealized losses on inventory is a clear recognition of "mere value changes," if only in one direction, as being relevant to the determination of income. As final evidence of the same tendency, I suppose we might cite the development of cash accounting into accrual accounting as itself a de-emphasizing of the importance of realization. For what it is worth, we can perhaps say that over the years accounting income and economic income have moved a little closer together. Yet of course, when everything has been said, accounting income is still substantially realized income.

The tableau set out above may make it easier for us to evaluate the two income concepts in terms of the two qualities which outweigh all others in importance, their usefulness and their practicality. It is because the results of this evaluation are what they are that it is natural to hanker after a compromise income concept which has a greater share of these qualities combined than either accounting or economic income has, taken by itself.

THE CASE FOR AND AGAINST ACCOUNTING INCOME AND ECONOMIC INCOME

Whether we use one concept of income or another, or indeed whether we use any concept of income at all, clearly should depend, as I have already said, on the purpose we want to serve and the income concept which will best serve it. In what follows I shall concentrate my attention on one aspect of this matter only, namely, the measurement of business income for the purpose of assessing entrepreneurial success or failure in the profit-making sector of the economy. From this point of view it must be said that accounting income is seriously defective. By focussing attention on the result of current realization of assets and ignoring all other value changes except such as are covered by the "cost or market" rule, and by depreciation, it can lead to some rather ridiculous results. One such result is that described by Kenneth MacNeal.⁵ Two investors each have \$1,000 to invest. One buys \$1,000 worth of stock A, the other buys \$1,000 worth of stock B. By the end of the year both stocks have doubled in price. The first investor sells out just before Dec. 31, and reinvests the \$2,000 he gets from the sale in stock B. The second investor continues to hold his block of stock, which is also worth

⁵ In his article "What's Wrong with Accounting," *The Nation*, October 7-14, 1939, and reprinted in the 1950 edition of *Studies in Accounting*, ed. W. T. Baxter (London, Sweet & Maxwell, Ltd.).

\$2,000 at the end of the year. Thus both start equal, with \$1,000 each in cash; they also finish equal, both holding equal quantities of stock B worth \$2,000. It is impossible to say that one investor has been more successful than the other. Yet one of them shows an accounting profit of \$1,000 as the result of his realization, while the other shows no accounting profit at all.

Another absurd result is cited by Sidney Alexander, that of the manager of a large corporation who is considering a deal which will increase his accounting profit by a million dollars but which will result in the destruction of the firm's goodwill by forcing it out of business. By looking only at changes in tangible equity (and only at a part of that), while ignoring changes in goodwill, accounting income provides us with a very unsatisfactory measure of managerial success. Another way of putting this is to say that if maximizing profit is ever a rational business goal, it is rational only if profit means economic profit, not accounting profit.

It may be said, and with truth, that the differences between accounting income and economic income are only short-run differences, i.e. if we take a sufficiently long period in the life of an enterprise the changes in the value of equity which distinctively enter into economic income will also be reflected in accounting income. Thus MacNeal's second investor will have his wise investment reflected in his profit when eventually he sells his stock in a later period, if by then it has not fallen in value. That over the whole life of an enterprise its total accounting income and economic income must be identical cannot be gainsaid. But this is poor consolation for short-run defects in our measure of income. All the problems of income measurement are the result of our desire to attribute income to arbitrarily determined short periods of time. Everything comes right in the end;

but by then it is too late to matter.

Having cast some doubt on the effectiveness of accounting income as a gauge of managerial success, we have to recognize that it emerges satisfactorily from the other test, that of practicality. Insofar as objectivity is regarded as an indispensable quality of an income concept which is to have any claim to being practical, accounting income is practical enough. But this is of little moment if it does not measure what we want to measure. Objectivity without relevance is not much of a virtue. The question is whether we can retain some or all the objectivity of accounting income while answering the question which accounting income palpably fails to answer: How much better off has the accounting entity become during the period?

In passing, we might notice a contrary point of view on the relevance of the two income concepts we are comparing in a statement by Professors Hill and Gordon⁶. Rejecting the idea that unrealized profits should be included in income, they argue that "information as to what management expects to make on the things it has not sold is no substitute for information as to what management has made on the things it has sold." The answer to this is that neither is the second kind of information a substitute for the first, and it is only the second kind which accounting conventionally provides. Both kinds of information are necessary to assess managerial success. As I have already tried to show, to look at realized profits and losses only may be to ignore an important part of the total picture.

In advocating their particular brand of business income, economists have usually argued that the increase in net worth of the enterprise, which constitutes income, must be arrived at by valuing the whole enterprise at the beginning and the end of

⁶ *Accounting: A Management Approach*, by T. M. Hill and Myron J. Gordon (2nd edition, 1960, Irwin), p. 143.

the period whose income we wish to measure. These valuations, they say, must be made by discounting, at each date, the expected stream of receipts less the expected stream of payments of the enterprise as far into the future as possible, to arrive at the present value of the net stream. Any amounts distributed by the enterprise to its proprietors during the period must, of course, be added back to give the increase in net worth which, in this view, is synonymous with income. Expressed in this way, the concept looks quite impractical, for it seems to demand a superhuman degree of foresight, not only about the broad sweep of events but also about the details of day-to-day transactions.

I do not think that too much should be made of this difficulty. We do not allow uncertainty about the future entirely to inhibit us from valuing property on the basis of expected net receipts, or at least on the best estimate we can make of them. Moreover, there are simplifying assumptions we could make which would render the valuation process more manageable. Nevertheless, the difficulties are still somewhat formidable.

A second difficulty about the concept of economic income is that in successive discounting of expected future receipts and payments, effect will have to be given not only to real foreseeable changes in the enterprise's future, but also to changes in human expectations about this future. Thus, suppose that at the beginning of the period a large receipt is foreseen as coming in three years' time. At the end of the period (of, say, a year) the receipt is thought to be much less certain, and in any case probably smaller than was previously expected. The net worth of the enterprise will have apparently shrunk during the year, then, not because of a real change in the future but only because of a change in expectations about the future. Thus

economic income will react both to real future changes and to changes in human expectations, and the effects of these two sets of factors will be inextricably combined.

THE CONCEPT OF VARIABLE INCOME

The concept of "variable income" attempts to eliminate the effect of a change in expectations from our measure of economic income. Alexander, it will be remembered, approaches the problem of measuring business income by considering first the income from a bond, indeed from quite a variety of bonds. He starts with a perpetual bond which pays no interest in the ordinary sense, but whose owner annually receives \$10 if, on the toss of a coin, it comes down heads and nothing if it comes down tails. As a matter of fact this example is hardly more bizarre than the British premium savings bonds which have been in issue since 1956 and which, while securing the investor's capital, pay no interest in the ordinary sense but offer the chance, after a qualifying period of six months, of a prize in a monthly lottery. The amount of the prize fund is determined by calculating interest, at the rate prescribed from time to time, on the bonds eligible for the draw. In the case of Alexander's perpetual bond, he argues that, assuming a 5% rate of interest, the bond would maintain a steady value of \$100, whatever the results of the tosses from year to year, for an even chance of receiving \$10 or nothing is equivalent to an expectation of receiving \$5 each year, giving a capital value, at 5%, of \$100. As a matter of fact, according to the strength of the gambling instinct in the community in question, the bond might just as easily be worth more or less than \$100; but so long as its value is accepted as being unaffected by the results of each toss, it does not matter just what that value is. And of course, since each toss is a separate event,

the chances of success next time are unaffected by past results, so there is no reason why the value of the bond should be affected by the incidence of heads or tails. The income from the bond in any year is then equal to its owner's receipts from it, \$10 or nothing according to the result of the toss.

We get closer to real life with Alexander's second bond, which is like the first but has a life limited to 20 years. This bond at the outset will have a capital value of \$62.70, this being the present value, at 5%, of a 20 year annuity of \$5 annually (the expectation of receipts from the bond). A year later, regardless of the outcome of the toss, it should be worth only \$60.42, the present value of a 19 year annuity of \$5, and each year as the bond's expectation of life diminishes, its value will continue to fall. In this case the bondholder enjoys an income which is always less than his receipts by the amount of the diminution in the value of his security. The loss of capital value in the first year was \$2.28, so that if the coin came down heads his receipts were \$10 and his income was \$7.72, while if the coin came down tails his receipts were zero and his income was -\$2.28. This illustration leads us straight to Alexander's first definition of variable income, at least as it applies to income from securities, which is that variable income is equal to the net receipts from the security plus or minus any change in its value which was, *at the beginning of the period*, expected to take place during the period.

This it must be noted, is a first approximation to the definition of variable income for the full definition has to provide for the possibility that the net receipts of the period may themselves cause future expectations of receipts to be modified during the period, as where a particularly large distribution to owners of a security during the present period is made at the expense

of distributions to be made in future periods. In such a case, variable income has to be defined as the net receipts from the security plus or minus any change in its value during the period which was expected at the beginning of the period, plus or minus the discounted present value of any consequential change in expected future receipts brought about by the level of current receipts. This modification of the definition to take account of consequential change in the value of the security will be seen to be of some significance when shortly we consider the determination of the variable income of a business enterprise.

Because changes in the value of a security which result from changes in expectations which occur during the period are excluded from the definition of variable income, this does not mean that they must be neglected altogether. What it does mean is that they are considered to be best kept separate from income, to be reported separately as unexpected gains. Here, another of Alexander's illustrations makes the point clear. Suppose, he says, the amount paid on the perpetual bond is suddenly raised from \$10 or nothing on the toss of a coin to \$12 or nothing. At a 5% rate of interest this announcement will raise the value of the bond from \$100 to \$120. There is an unexpected gain of \$20, quite apart from any variable income there may be during that year.

This is perhaps a suitable point at which to compare the informativeness of the three income concepts we can choose from in this case. Accounting income would be reported as \$10 for the year if the coin came down heads. The change in the terms of the bond would not be regarded as having any relevance to the determination of current income. Economic income would be reported as \$30, the receipts for the period plus the increase in the value of the bond. Alexander's proposal is that we

should report a variable income of \$10 and an unexpected gain of \$20. There seems to me to be no room for doubt that this last method of reporting is more informative than either of the others, if our purpose is to assess the success of the bondholder's investment policy for the year.

Incidentally, the relationship between economic income and variable income can be expressed symbolically quite simply, if we write V as the value of the asset whose income we are considering, R for the net receipts from it, use the subscripts 0 and 1 for the beginning and end of period 1, and the further subscripts a and e for actual magnitudes and expected magnitudes respectively. Then:

Economic income

= Variable income + unexpected gain

$$V_{1a} - V_{0a} + R_a$$

$$= (V_{1e} - V_{0a} + R_e) + (V_{1a} - V_{1e})$$

However, it has to be admitted that this formulation is incomplete insofar as it excludes from variable income and leaves in unexpected gain the consequential changes in V_{1a} which have already been referred to.

THE VARIABLE INCOME OF A BUSINESS ENTERPRISE

It is easy enough to separate the receipts of the owner of a security from the security itself. When we turn to a business enterprise, we cannot use the amounts distributed by the enterprise to its proprietors to help us in determining the income of the enterprise; and the net receipts of the enterprise will include the proceeds of converting non-cash assets into cash, which proceeds we obviously cannot reckon as income. What corresponds to R_e , in the case of an enterprise, is the change in net tangible assets during the period, all assets being valued at cost. This is equal to accounting net income before

charging depreciation or providing for inventory mark-downs, and it is the first element in enterprise variable income.

The second element, $V_{1e} - V_{0a}$, is the change in the ex dividend value of the enterprise during the year which can be predicted with more or less certainty at the beginning of the year. This predictable change in value is, I suggest, what we ought to be measuring when we provide for depreciation, that is to say, it is depreciation based more on the expected loss of market value through use or obsolescence of assets rather than on allocations of historical cost.⁷ Of course, in a world from which uncertainty had been banished, these two concepts of depreciation would amount to the same thing.

The third and last element in the variable income of a business enterprise, corresponding to the consequential change in the value of a security resulting from the year's distribution to proprietors, could be of major importance. We must include in variable income any change in the value of the enterprise which is the result of managerial activity during the year over and above the predictable change just discussed. Such change may take the form of a change in the value of tangible assets or a change in the value of goodwill. To qualify for inclusion in variable income these value changes must be brought about by the activity of the firm. If they are purely the result of factors extraneous to the firm, such as a change in the law or a change in the market rate of interest, then they are not part of variable income but are unexpected gains.

The distinction which has to be drawn here is between value changes which are merely the result of a change in expectations and value changes which are the

⁷ I must repeat here that I am assuming away changes in the value of money. Insofar as these must be reckoned with, some form of stabilization would have to be built into the above scheme.

result of managerial activity. If variable income is to measure the firm's success in adding to its well-off-ness, value changes of the latter type must be included in it. In his original formulation of the way in which the variable income of a corporation might be determined, Alexander did not draw a distinction between internally and externally generated changes in the value of goodwill, but suggested that any change in its value might be included in variable income. However, this seems to me to be inconsistent with his earlier definition. The principal difference between variable income and economic income, as I understand it, is that while economic income includes all changes in the value of net worth which have taken place during the period, variable income includes only those changes which inevitably result from the passage of time or are the result of the activities of the period. To implement this idea, we have to try to distinguish changes in the value of goodwill which are the result of managerial activity, those which reflect, that is to say, changes in expectations brought about by the management and changes in the value of goodwill which cannot so be accounted for.

We have, then, these three constituents of variable business income:

1. The change in net tangible assets, valued at cost.
2. As a deduction, the expected loss of market value of assets through use or obsolescence.
2. Internally generated differences between the value of both tangible and intangible assets at the accounting date and their cost at date of acquisition (or their value at the previous accounting date), to the extent that these differences have not already been included in (2) above.

It is this third element, and especially the recognition of certain changes in the value of goodwill as constituting part of the firm's net income, which particularly distinguishes variable income from accounting income.

CAN WE MEASURE VARIABLE INCOME?

Variable income is a valuable idea, I think, in clarifying our thinking about what an income concept should give us and in recognizing the limitations of accounting income. But can we, in practice, hope to make the distinction between those value changes which are to be included in variable income and those which are to be included in unexpected gain?

Regretfully, I do not think that we can. We must remember that we have two problems, one of valuation and one of attribution, if we want to implement the idea of variable income for a business enterprise. Even if we are prepared to ignore any but quite substantial divergences between the depreciated cost and the current value of tangible assets, we should as a minimum have first to revalue goodwill at the end of each accounting period and then to apportion any change in its value between that part which was the result of managerial activity and that part which was the result of good or bad luck. One has only to state this difficulty to see that there can never be any simple solution to it. Even in very simple domestic situations we know that we can rarely separate the results of good luck and good judgment. In a complex business situation, how much less likely are we to be able to do so!

This difficulty, which would confront us even if our accounts were kept in monetary units of constant purchasing power, is exacerbated when we have to allow for price level changes. When an asset is bought for \$1,000 and prices in general rise so that a year later the asset, though then partly worn out, is worth more on the market than when it was first bought, is this value change to be regarded as an "unexpected gain" or are we to attribute it to the good judgment of management in purchasing the asset in anticipation of a price rise? If the use of the variable income idea requires us to answer questions like

this, I conclude that we simply cannot use it, except, perhaps in simple non-business situations.

CONCLUSION

Just as Hicks was led to the conclusion that income was not an effective tool of economic analysis, so it seems to me that we are led to the conclusion that periodic income is not an effective tool of financial planning or control. This conclusion seems to accord ill with the fact that income measurement has long been a central theme of accounting and the main preoccupation of the accounting profession. Yet this fact need not impress us. The practice of medicine once consisted largely of blood-letting. It may be that we are already witnessing a decline in the importance of income measurement.¹ Certainly there is a livelier sense of the short-comings of ascertained profit figures than there once was, for most of the purposes for which such figures have traditionally been used. There is a rather striking confirmation of this in the preamble to Recommendation XV of the Institute of Chartered Accountants in England and Wales. This Recommendation is concerned with the price-level problem, and the passage I have in mind (paragraph 312) reads as follows:

"The Council cannot emphasise too strongly that the significance of accounts prepared on the basis of historical cost is subject to limitations, not the least of which is that the monetary unit in which the accounts are prepared is not a stable unit of measurement. In consequence the results shown

by accounts prepared on the basis of historical cost are not a measure of increase or decrease in wealth in terms of purchasing power; nor do the results necessarily represent the amount which can prudently be regarded as available for distribution, having regard to the financial requirements of the business. Similarly the results shown by such accounts are not necessarily suitable for purposes such as price fixing, wage negotiations and taxation, unless in using them for these purposes due regard is paid to the amount of profit which has been retained in the business for its maintenance."

This seems pretty much to throw away the baby with the bath-water.

The fact is that, for several important purposes, periodic income, either historical or prospective, has already been or is being superseded. For decision-making purposes the idea of "contribution" has taken over from net income. In the field of taxation, we depart from income as the tax base every time we introduce special allowances for depletion, or provide for accelerated depreciation, or permit an anomalous treatment of capital gains. Even for reporting to stockholders, just as in the first half of this century we saw the income statement displace the balance sheet in importance, so we may now be de-emphasizing the income statement in favor of a statement of fund flows or cash flows.² Each of us sees the future differently, no doubt. But my own guess is that, so far as the history of accounting is concerned, the next twenty-five years may subsequently be seen to have been the twilight of income measurement.

BUDGETING MODELS AND SYSTEM SIMULATION¹

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Exposition of the Problem

PERIODIC budgeting, as practiced in industry and taught in the accounting curriculum, combines estimates by individual departments in a process of coordinative aggregation. The purpose is to supply management with a financial plan for future operations.

Frequently, budgeting is charged with the more ambitious task of "finding the most profitable course"² for an enterprise. If this means selecting a combination of managerial policies which *optimizes* the long-term profit of the enterprise, the above definition of the purpose of this discipline seems to overstate the potential of traditional budgeting activity. It makes the layman believe that this area of accounting is in a position to determine *optimal solutions*. Undoubtedly this is not the case since budgeting traditionally neither applies any algorism to optimize the long term profit function nor provides any means for determining and comparing all the alternatives resulting from the *innumerable* factor and policy combinations feasible for an enterprise. If it means, however, finding a policy that yields a prospective profit considered to be *satisfactory*, the above definition is acceptable (provided the term "satisfactory" is interpreted in the Simonian meaning of the best acceptable solution within a limited range of alternatives. Herbert Simon calls such a procedure "satisficing" as opposed to the more demanding operation of "optimizing"³).

With the application of mathematical-scientific approaches to management problems and the progressive use of automatic data processing, the question arises—In what way can future periodic budgeting

be improved? Before a quest for reform can be considered it is necessary to make a distinction between the immediate future and the long run. There is no doubt that *ultimately* it will be desirable to "optimize" within our budgeting models, but only as long as the mechanism for optimization does not restrict the budgeting procedures in other directions or impose upon them other oversimplifications. The optimization model which has been proposed in the award winning dissertation by Stedry⁴ is a meritorious attempt to find a starting point for the development of managerial models in budgeting; it is a pioneering effort which, considering the lack of "operational research" procedures in accounting, cannot be praised highly enough, though there is still much room for improvement. On the other hand we must not overrate the immediate *practical* usefulness of this approach on a large scale (for further details see notes 14 and 16); like most managerial optimization models it suffers under the serious handicap of being restricted to a single department or limited area of operations, thus enabling us only to *sub-optimize* without any hope for "*overall-optimization*" of the whole enterprise. It therefore seems opportune to

¹ The author wishes to acknowledge gratefully (1) the financial support of the Management Science Group—Berkeley (Ford Foundation funds) during the summer of 1960 to this project, (2) the stimulating discussions under the eminent leadership of Prof. C. West Churchman, and (3) the advice and comments he has received from Professors C. Devine, M. Moonitz and J. Wheeler.

² Heckert, J. B., and Wilson, J. D., *Business Budgeting and Control* (second edition), p. 14.

³ Simon, Herbert A., "Theories of Decision-Making in Economics and Behavioral Science" *American Economic Review*, June 1959, 49, p. 264. See also March, J. G., and Simon, H. A.: *Organizations*, New York, 1958, pp. 140-41, 169.

⁴ Stedry, Andrew C., *Budget Control and Cost Behavior*, Englewood Cliffs, 1960, pp. 113-143.

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develop a less ambitious approach which however has the advantage of applying to the *whole* enterprise and which eventually may be utilized in combining sub-optimization models for individual departments. One purpose of this paper is to stimulate experimentation and simulation with "aggregation models." The concrete example presented in the third section is a first attempt at formalizing such a model and therefore constitutes an illustration rather than an ultimate solution; hence suggestions for further improvement are invited.

As established before, traditional budgeting already offers a primitive procedure of "satisficing" a goal function. It suffers, however, from the shortcoming of including too small a number of possible alternatives from which to choose in determining the "most satisfactory" solution. Besides, we all recognize that the traditional budget, even if it is a flexible budget, is very difficult to adjust to suddenly changing conditions; it is at best "flexible" only with regard to a changing sales or production volume. Our present proposal therefore rests on the simple assumption that a model which permits the calculation of a larger number of alternatives based on more numerous "flexible" variables and eventually changing parameters, would yield a better approximation to the ideal but unattainable optimum solution. This could be made possible by means of electronic computers and system simulation (discussed in the next section). To construct a model for such a task requires the translation of a traditional budgeting system into algebraic terms. This has not been done before, since accountants are accustomed to present their knowledge through particular examples and individual illustrations, a practice that explains the overemphasis on technicalities and the abounding use of illustrative tables with long figure columns in textbooks of accounting and related fields.

The "general" formulations of the accountant rest mainly on verbal descriptions, and past attempts to break this habit were not successful largely because of the conservative attitude of accountants. The present situation appears more promising as more and more accountants realize that soon they will be working in a highly mathematical atmosphere whether they desire it or not. It also must be borne in mind that a few decades ago modern algebraic notations (e.g., sigma and matrix notations) were not applied at all, at least not in the economic sciences. It is due to these notational devices that a concise and yet general presentation is made possible.

To some operations analysts the mere translation of accounting models into mathematical terminology, without a calculus for determining an optimum, might appear to be a rather pedestrian task. We are convinced, however, that as long as accounting methods are acceptable to the industry the mere change to a mathematical formulation will be advantageous for several reasons: (1) it can be considered a prerequisite for applying electronic data processing to certain accounting problems;⁶ (2) it articulates the structure of the accounting models and illuminates accounting methods from a new point of view, revealing many facets so far neglected or unobserved, (3) it enables a *general* and hence more scientific presentation of many accounting methods, (4) it facil-

⁶ For those who appeal to G. Clarkson and H. Simon's statement that "We are beginning to learn that models do not have to be stated in mathematical or numerical form to permit us to simulate their behavior with electronic computers,": "Simulation and Group Behavior" in *American Economic Review*, December 1960, p. 923, [cf. Herbert A. Simon: *The New Science of Management Decision* (New York, 1960), pp. 22, 24-25], we may reply that even if mathematics in the narrow sense of the word can be relinquished, symbolic logic will have to be substituted for it. Therefore if we promote the acquisition of mathematical knowledge by accountants we refer to it in the broadest sense of the term and include the achievements of modern logic as well.

tates the exploration of new areas, thereby accelerating the advancement of accounting. The example chosen for this paper shall particularly emphasize this point, and finally (5) it leads to more sophisticated methods and might help to lay the foundation for close cooperation of accounting with other areas of management science. Therefore, we will attempt to develop a concise but fairly general frame for traditional budgeting and explore the possibility of extending or modifying such a model for the purpose of determining "satisfactory" if not "optimal" managerial plans.

Such an approach has the advantage of using traditional budgeting as a basis for developing a more refined and perhaps a more scientific treatment of the problem.

The Meaning of Simulation

Whether accounting is considered to be a part of management science will depend to a great extent on the effort accountants make in absorbing tools and techniques of management science and in incorporating them into their own conceptual apparatus. So far, in spite of recognizable endeavors, the vocabulary of management science still constitutes a "foreign" language to many accountants, and before embarking upon construction of a budgeting model for *simulation* purpose it becomes advisable to subject the concept of "system simulation," and its use by management scientists, to some investigation.

For a long time social scientists have envied physicists and chemists their vast opportunity of experimentation. This, it is true, has not been their only object of envy, but considering the broad experimental basis on which the achievements of the natural sciences rest, it is still a major target of envy. Every-day life, no doubt, supplied social scientists with *surrogate* experimental material, the cognitive value of which shall by no means be underrated;⁶ but it usually forces relinquish-

ment of the most important features of the experiment: control of certain variables and arbitrary repetition, a limitation which holds in particular for economics and business administration. In practice, neither the whole economy nor an individual firm lends itself to experimentation in the true sense of the word.

The advent of electronic data processing systems, however, seems to have opened the door to experimental ventures—and adventures—for the economic sciences mainly through the channel of "system simulation." Such experiments are of course of a different nature than those of the physicist as they do not deal with the medium of reality itself but only with its mathematical structure; they do enable, however, the mental reproduction of a large number of alternative situations and thus help to determine *satisfactory* if not approximately optimal solutions. As Malcolm says, "System Simulation has the most useful property of permitting the researcher and management to experiment with and test policy, procedure and organization changes in much the same way as the aeronautical engineer tests his design ideas in the laboratory or in the 'wind tunnel.' Thus we might think of System Simulation as a sort of 'management Wind Tunnel' which is used to pre-test many suggested changes and eliminate much needless 'experimentation' with the 'real' people, machines and facilities."⁷

In contrast to the "wind tunnel," the simulation models of the management scientist are analytical or analog models which frequently incorporate probability concepts. Where the latter holds—particularly in cases which hinge on a statistical distribution whose structure is not exactly known—a special simulation ap-

⁶ Schumpeter, Joseph A., *History of Economic Analysis* (New York, 1954), p. 16 (vide his citation of Leon Walras).

⁷ Malcolm, D. C., Foreword to *Report of System Simulation Symposium*, New York, 1957, p. v.

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proach has been developed under the name of *Monte Carlo method*.⁸ The frequently encountered identification of the term, "simulation method" with the expression, "Monte Carlo method" does not seem justified however, since the former implies a much more comprehensive concept than the latter. Not every simulation model relies on a "simulated probability distribution"; the following example of a budgeting system for simulation purposes may be taken as a case in point. For problems which cannot be forced into the strait-jacket of an optimization model, or for optimization problems of a forbiddingly complex mathematical structure, *approximate solutions* may be found by simulation; that is by determining and scanning an array of alternative combinations and selecting that with the most favorable outcome. This of course is a fairly crude approach since "the result of a simulation is always the answer to a specific numerical problem without any insight into why that is the answer or how the answer would be influenced by a change in any of the data."⁹

Nevertheless simulation may have some appeal to accountants, and indeed the traditional approach to periodic budgeting can, with some imagination, be regarded as a simulation model. It is true that this model so far has not appeared in mathematical attire, just as it is undeniable that the array of alternatives calculated is usually restricted to a small number only. The test for the existence of a simulation approach, however, is the selection of a satisfactory solution from alternatives, even if it is reflected in the preparatory work to the budget rather than in the coordinative level of the budgeting model itself. On this coordinative level the "flexible" budget could be interpreted as a series of alternatives; here the purpose of calculating conditions under various output levels serves primarily to adjust the budget for suddenly changing output conditions, while

changes in the product-mix, in wage rates, material prices and other costs are rarely given consideration. By simulating the firm through a budgeting model it should be feasible to extend the flexibility into these other directions. Therefore a major purpose of the proposed project is to provide for a *multi-dimensional variability or flexibility* of the budget. According to the needs, certain alternatives could be printed out at the beginning of the budgeting period while other alternatives would be quickly available through a stored computer program into which data for the changed variables or parameters could be inserted.¹⁰

Traditional Budgeting as a Mathematical Model

Budgeting, as traditionally practiced, is frequently regarded as "accounting for the future." Even if thereby no individual double entries are recorded, the coordination of financial flows is carried out with reference to the classificational device of accounts. Some time ago we have hinted at the possibility and eventual usefulness of presenting accounting in form of a system of simultaneous definitional equations.¹¹ This is what Dorfman¹² calls the "first" or "straight forward descriptive aspect" of model building; although it is

⁸ Miller, D. W., and Starr, M. K. *Executive Decisions and Operations Research*, Englewood Cliffs, 1960, pp. 152-55.

⁹ Dorfman, Robert, "Operations Research" *American Economic Review*, September 1960, 50, p. 604.

¹⁰ For the reader who wants to inform himself in greater detail about many facets of system simulation we recommend: "Simulation: A Symposium" (three articles by G. H. Orcutt, M. Shubik, G. Clarkson and H. Simon) *American Economic Review*, December 1960, pp. 893-932 and the reports of the first and second *System Simulation Symposium* (sponsored by the American Institute of Industrial Engineers, The Institute of Management Science, and the Operations Research Society of America; New York, 1958 and 1960).

¹¹ Mattessich, Richard, "Towards an Axiomatization of Accountancy, with an Introduction to the Matrix Formulation of Accounting Systems" *Accounting Research*, October 1957, pp. 328-355 and "Mathematical Models in Business Accounting," *Accounting Review*, July 1958, pp. 472-481.

¹² Dorfman, Robert, "Operations Research" *American Economic Review*, September 1960, 50, p. 604.

an indispensable step, it no doubt results in "an essentially tautological and sterile description of the problem." In budgeting, however, the second aspect, the state of "creative hypothesizing" is, at least in principle, also materialized—though it may be a matter of controversy whether the hypotheses of customary budgeting constitute a satisfactory and creative achievement. Yet, the question arises whether budgeting may not be the most fertile soil of accounting for planting meaningful mathematical models. It is therefore not surprising that the problem of budgeting (in the broadest sense of the word) has been attacked *mathematically* from various points of view. The oldest, occasionally encountered, and most elaborate approach is the construction of "flow models" for the whole firm. It is true that the hypotheses used in some of these models might be considered as being less crude than those of traditional budgeting, but apart from the fact that their aim might be considered as going beyond the task of a purely financial plan, it is, from the viewpoint of actual practice, not too successful an approach and for the time being has been restricted to business games. It may well be the most promising method of the future, but in spite of intensive experimentation by many research groups so far the immense number of variables and the magnitude of the task of determining a host of unwieldy parameters have prevented results which give hope to any *wide* and immediate application in the area of industrial budgeting.¹³ The second approach can be called a "behavioral model" and is restricted to the control task of budgeting. It is contained in the first part of Stedry's thesis¹⁴ and its originality may warrant further study by the reader.

Stedry makes a rigorous distinction between budgeting for control purposes and budgeting for planning purposes. Out of this distinction follows the third approach

(also developed by Stedry and mentioned previously) which consists of a linear programming model for maximizing the profit function of an individual department. Such "planning" models might be incorporated into the aggregation model suggested below but are not by necessity an integral part of it; it is conceivable that budgeting on the departmental level may continue in the traditional way while only the budgeting activity on the coordinative level uses a mathematical model. Even then a multitude of alternatives is feasible.

Fundamentally there is no difference between the following budgeting model and other simulation models of management science. The main criticism against such an approach therefore cannot be found on the methodological plane but must be sought on the level of hypotheses formulation. It is as easy for accountants to demonstrate that their traditional approach is nothing but the application of various models (translatable into mathematical terms), as it is difficult for them to refute the reproach that their models are too simple and their hypotheses too crude. The main weapon in their defense, of course, lies in the counter-argument that "too simple" and "too crude" are very relative concepts; and what may appear to the theoretician crude, might be considered by the man in practice, who has to weigh costs against benefits, as fairly satisfactory. Therefore this challenge becomes critical only in the moment when the hypothesis becomes so crude and the

¹³ However a project of such a "flow model" or "management control system" has been undertaken on a large scale by the Systems Development Corporation (Santa Monica). So far only one aspect of management control has been investigated—the effect of using particular decision rules—through a mathematical model constituting a huge queuing network. Theoretically, this is a fascinating approach and no doubt will bear fruit in the *long run*. Vide: J. B. Heyne, "Planning for Research in Management Control Systems," Technical Memorandum—546, SDC, October 1960, pp. 30.

¹⁴ Stedry, Andrew C., *Budget Control and Cost Behavior*, Englewood Cliffs, 1960, pp. 17-42.

model so full of "gaps" that it must be considered meaningless. In the following model we have used those hypotheses generally accepted in budgeting textbooks as well as in actual practice. Our answer is therefore highly pragmatic, if we justify our approach with the evidence that these hypotheses are used in thousands of enterprises all over the world. Their present acceptance is certainly enough justification for using them as a *starting point* for the construction of a framework which, due to its general formulation, should be flexible enough to be adaptable to more refined hypotheses.

This model, fully spelled out, consists of several hundred simultaneous equations and is intended for experimental use in various enterprises. To avoid overburdening this paper with so many equations we present here only the most important equations, primarily those which represent in a *succinct* way the tables occasionally encountered in textbooks of budgeting¹⁵ in a fairly general form.

We may point out that in order to understand the presentation of the budgeting model in symbolic form no knowledge of higher mathematics is required; some familiarity with algebra and the handling of the sigma-notation should prove sufficient. The sigma notation is shortly explained in the following and can easily be mastered by practising the writing of summations in the new, but perhaps unaccustomed, way. Thereby it is well to remember that the various sub- or superscripts refer to different "dimensions" and that we are here concerned with four dimensions, the product, the cost item, the department, and the time. Only the very last part in which we have tried to connect our model with Stedry's departmental optimization approach requires some familiarity with maximization under constraints. In order to make the explanation to these equations as concise as possible,

a key of symbols with short explanations precedes the equations. It should be mentioned that the list of all variables is actually much longer but is abbreviated through a device explained as follows:

Assume in a factory producing furniture the subscript i refers to the product "chairs no. 3487," the subscript j to the labor of "carpenters at the wage rate of \$2.00 per hour," the subscript d to the department "polishing." Furthermore assume that the symbol L represents the total labor hours in the factory (during the period anticipated), then L_i represents the labor hours to be devoted to product i —in this case to chairs no. 3487—and L_j expresses the "carpenter" labor hours to be required, and L_d the labor hours expected in department "polishing." It is important to recognize that first, these subscripts can be generalized (e.g. $i=1, \dots, n; j=1, \dots, r; d=1, \dots, u$), that means they do not anymore refer to a certain product, cost item, or department respectively, but to *any* of the n products, the r cost items, or the u departments respectively; and second, that various combinations of these subscripts are possible like L_{ij} (labor hours of work j for product i), or L_{jd} (labor hours of work j in department d), or L_{id} (labor hours of work j in department d required for product i), or L_{id} (labor hours in department d required for product i), etc. Hence, the reader must be aware that L_i and L_{ij} or L_d are *different variables*. Consequently the following formulation:

$$\begin{aligned} L &= \sum_i L_i = \sum_i \sum_j L_{ij} = \sum_i \sum_j \sum_d L_{ijd} \\ &= \sum_i \sum_d L_{id} = \sum_d L_d = \sum_j L_j \end{aligned}$$

expresses the fact that the total of the labor hours (anticipated in the budgeting period) is equal to the sum of all sub-totals of labor hours required for the various prod-

¹⁵ Welsch, Glen A., *Budgeting: Profit-Planning and Control*, Englewood Cliffs, 1957.

ucts ($i=1, \dots, u$); is also equal to the sum total of all labor hours required for the individual products specified according to the various cost items ($j=1, \dots, r$); is furthermore equal to the sum total of all labor hours required for the individual products specified according to both cost items and departments; etc., etc.

The sigma-notation as used here is one of the most valuable tools of modern algebra and very easy to learn; it may be unfamiliar at first but after a little practice it proves to be a very simple tool but highly useful, especially in accounting where summations or aggregations occur continuously.

The reader will notice that to our three dimensions: product item ($i=1, \dots, n$), cost items ($j=1, \dots, r$), and department ($d=1, \dots, u$ for producing departments and $h=1, \dots, e$ for service departments), time is added as a fourth dimension (using the superscript t for various budgeting periods—omitted when misunderstandings are not likely—or τ for subperiods like months as used in the present model).

Some Explanations to the Symbolic Presentation

The following does not identify each individual symbol but gives a general notion of the basic symbols to which, according to the specification desired, the following subscripts and superscripts will have to be added. If in a formula no sub- or superscript is attached to a symbol, the pertinent variable or parameter refers to the entire production or sales activity of the enterprise and the whole budgeting period.

Subscripts:

- i* indicates the kind of product ($i=1, \dots, n$)
- j* indicates the kind of cost item ($j=1, \dots, r$)
- d* indicates the kind of producing department ($d=1, \dots, u$)
- h* indicates the kind of service department ($h=1, \dots, e$)

d and *h* are mutually exclusive and refer to the same dimension.

Superscripts:

- t* indicates the budgeting period. In cases where no doubt can arise the omission of the superscript *t* means that the pertinent symbol refers to the whole budgeting period in case the symbol represents a flow concept, or it refers to the end of the budgeting period in case the symbol represents a stock concept. Accordingly, $t-1$ refers to the whole period preceding the budget period in case of a flow concept; and the end of the preceding period (=the beginning of the budgeting period) in case of a stock concept.
- τ* refers to a whole sub-period of the budgeting period (usually a certain month, $\tau=1, \dots, 12$) in case of a flow concept, or to the end of this sub-period in case of a stock concept. Accordingly, $\tau-1$ refers to the sub-period preceding, in case of a flow concept, or the beginning of τ (=the end of $\tau-1$) in case of a stock concept.

It should be noted that an increasing number of subscripts of a basic symbol indicates a decreasing degree of aggregation and vice versa.

A sub- or superscript below a Σ -sign indicates the summation over the whole range of the pertinent script.

It may also be pointed out that in general we have tried to adhere to the following scheme: upper case letters refer to variables whose units are other than \$; lower case letters refer to variables expressed in \$; Greek letters are used for denoting parameters. Since the border between exogenous variables and parameters is occasionally vague, the latter distinction cannot always be relied upon. Finally it is important not to confuse basic symbols with subscripts; this danger could not be avoided since the limited number of letters requires the use occasionally of one and the same letter for a symbol as well as for a subscript.

Key to symbols:

- F* quantitative performance in units (hours, etc. depending on the basis of factory over-

- head costs) of producing departments
 G quantitative performance in units (hours, etc. depending on the basis of overhead costs) of service departments
 I finished goods inventory (including partly finished goods inventory in equivalent units)
 J raw material inventory (in t , lbs, m^3 , etc.)
 L labor hours
 M raw material purchases (in t , lbs, m^3 , etc.)
 N raw material consumption (in t , lbs, m^3 , etc.)
 P production (in equivalent units)
 S sales (in units)
 a addition in capital budget (cost value of added fixed assets)
 b bad debt reserve (addition during period)
 c cost or expense item (not mutually exclusive with e, f, l, m , etc.)
 d depreciation charge not mutually exclusive with e, f, l, m , etc.)
 e operating expenses (administrative and selling expenses)
 f^* factory overhead expenses of producing departments before prorating service departments
 f factory overhead expenses of producing departments after prorating service departments
 g factory overhead expenses of service departments
 h cash holding
 i cost of finished goods inventory
 j cost of raw material inventory
 k fixed asset (average)
 l labor cost
 m cost of raw material purchases
 n cost of raw material consumption
 o owners' equity increase through additional investment in cash
 p cost of production
 q collection of accounts receivable
 r accounts receivable (balance)
 s sales revenues (net)
 t income tax cash payments
 u repayment of debt capital
 v variable operating expenses
 w variable factory overhead cost of producing departments after prorating service departments
 w^* variable factory overhead cost of producing departments before prorating service departments
 x cash expenditures
 y owners' equity decrease (dividends, etc.)
 z liquid funds to be procured during period
- α coefficient (parameter) expressing the sales (in units) as a percentage of sales of the previous period
 β coefficient expressing the sales (in units) of a sub-period as a percentage of the corresponding sales for the whole budgeting period
 γ coefficient expressing the quantity of raw material required (= to be consumed in production process) in a sub-period as a percentage of the quantity of the raw material requirement for the budgeting period
 δ coefficient expressing the purchases of raw material in a sub-period as a percentage of the corresponding concept for the budgeting period
 ϵ fixed cost portion of operating expenses
 ζ unit cost of finished goods inventory
 η coefficient expressing the production performance during a sub-period as a percentage of the corresponding concept for the budgeting period
 θ coefficient expressing the production activity in units of the basis on which factory overhead costs are calculated
 ι fixed portion of factory overhead costs of service departments
 κ standard rate of labor (in hours per equivalent product unit)
 λ wage rate (in \$ per labor hour)
 μ unit cost of raw material
 ν coefficient prorating variable factory overhead costs of service departments to producing departments
 ξ^* variable rate of factory overhead costs of producing department before prorating service departments
 ξ variable rate of factory overhead costs of producing departments after prorating service departments
 π unit cost of production
 ρ raw material requirement (in material units) per product unit
 σ sales price per unit of finished product (average)
 τ coefficient of capital (asset) addition distribution during budgeting period
 υ depreciation rate
 ϕ^* fixed portion of factory overhead cost of producing departments before prorating service departments
 ϕ fixed portion of factory overhead cost of producing departments after prorating service departments
 χ variable rate of factory overhead costs of service departments

- ✓ variable overhead rate of operating departments (after prorating service departments)
- ω coefficient prorating fixed factory overhead costs of service departments to producing departments
- Γ applied factory overhead rate
- Φ Function (or parameter) expressing accounts receivable solicitation in terms of sales or accounts receivables)
- Ω Function (or parameter) expressing expenditures as a function of costs

MODEL OF A GENERALIZED PERIODIC BUDGETING SYSTEM

Sales Budget:

$$s = \sum_i s_i = \sum_i \sigma_i S_i = \sum_i \sum_r \sigma_i \beta_i S_i^r$$

$$s = \sum_i \sigma_i \alpha_i S_i^{t-1}$$

Production Budget:

$$S_i = I_i^{t-1} + \sum_r P_i^r - I_i$$

$$P = \sum_i P_i = \sum_i \sum_r P_i^r$$

$$\pi_i^r = \frac{\sum \pi_i^r}{12}$$

$$p = \sum_i \sum_r \pi_i^r P_i^r = \sum_i \left(\pi_i^r \sum_r \eta_i^r P_i^r \right)$$

Raw Material and Purchasing Budget:

$$M_j^r = J_j^{r-1} + \sum_i \delta_{ij}^r N_{ij} - J_j^r = \gamma_j^r M_j$$

$$m = \sum_j \mu_j \left(J_j^{t-1} + \sum_i \sum_r \delta_{ij}^r N_{ij} - J_j \right)$$

$$m = \sum_j \left(j_j^{t-1} + \sum_i n_{ij} - j_j \right)$$

Direct Labor Budget:

$$l' = \sum_i \sum_j \sum_d \kappa_{ijd} \lambda_j \eta_{ijd} P_{ijd}$$

$$l = \sum_j \sum_d \lambda_j L_{jd}$$

Factory overhead cost budget, Producing departments and Service departments:

$$f = \sum_i \sum_d (\phi_{jd} + w_{jd})$$

$$= \sum_j \sum_d \left(\frac{\phi_{jd}}{12} + w_{jd}^r \right)$$

$$f_d^r = \sum_j \frac{\phi_{jd}}{12} + \xi_d F_d^r$$

$$\Gamma_d = \frac{f_d}{F_d} = \xi_d + \frac{\sum_j \phi_{jd}}{F_d}$$

$$\xi_d = \frac{\sum \xi_d^r}{12} = \frac{w_d}{F_d}$$

$$f_d = \phi_d^* + \sum_h \omega_{dh} \iota_h + w_d^* + \sum_h v_{dh} \chi_h G_h$$

$$g_h = \iota_h + \chi_h G_h$$

Operating Expense Budget:

$$e_j^r = \frac{\epsilon_j}{12} + \psi_j \sum_i s_i^r$$

$$e_j = e_j^r + v_j$$

Capital Additions Budget and Depreciation Schedule:

$$a = \sum_j a_j = \sum_j \sum_r \tau_j a_j = \sum_j \sum_r a_j^r$$

$$d = \sum_j d_j = \sum_j k_j v_j = \sum_j \sum_r d_j^r = \sum_j k_j \frac{v_j}{12}$$

The expense items e , f , l , and m are mutually exclusive among themselves, but are not mutually exclusive with the expense items b , c , d .

Accounts Receivable Collection Budget: subject to the following constraints:

$$q = \sum_i q_i = \Phi_i^{t-1} (r_i^{t-1} - b_i^{t-1}) + \sum_j \Phi_i^j s_i^j$$

Cash Budget:

$$x_j = c_j + p_j c_j - b_j c_j$$

$$z = \sum_j x_j = \sum_j \Omega_j c_j = \sum_j (c_j + p_j c_j - b_j c_j)$$

$$h^{t-1} + q^1 - u^1 + o^1 - x^1 - y^1 - t^1 + z^1 = h^1$$

$$h^1 + q^2 - u^2 + o^2 - x^2 - y^2 - t^2 + z^2 = h^2$$

$$\vdots$$

$$h^{11} + q^{12} - u^{12} + o^{12} - x^{12} - y^{12} - t^{12} + z^{12} = h^{12} = h$$

The symbol c_j ($j = 1, \dots, r$) may represent any cost or expense item. That means it may stand for n_1 or b_1 or f_1 or g_1 or e_1 , etc.

The pre-scripts b , p , e of the symbol c indicate beginning balance, purchases, and ending balance respectively (beginning and ending balances of course refer to deferred or accrued items in the broadest sense of the word).

In a similar way (i.e., by further use of non-mutually-exclusive variables) a projected balance sheet and income statement may be constructed. Both statements can be developed from the previous equations by mere accounting identities without the use of further behavioral parameters (it is, however, possible to include parameters in the form of liquidity coefficients and other statement ratios if one insists on a certain statement structure—obviously the best way to achieve this is to impose certain constraints on the model). Another aspect is the possibility of combining Stedry's limited substitution maximization model with the above aggregation system.

Within this framework such a maximization problem would assume the following form if our interpretation of Stedry's model is correct:¹⁶

Maximize:

$$\sum_i \left[\Delta_{id}^r P_{id}^r - \sum_j \left(\mu_j \frac{N_{ijd}^r}{\rho_{ijd}^r} + \lambda_j \frac{L_{ijd}^r}{\kappa_{ijd}^r} \right) \right]$$

$$\sum_j (N_{ijd}^r + L_{ijd}^r - \rho_{ijd}^r \kappa_{ijd}^r P_{id}^r) = 0$$

$$\sum_j \rho_{ijd}^r P_{id}^r \leq N_{id}^r \text{ max}$$

$$\sum_j \kappa_{ijd}^r P_{id}^r \leq L_{id}^r \text{ max}$$

$$*I_i^r \text{ max} \geq *I_i^{r-1} + *P_i^r - S_i \geq *I_i^r \text{ min}$$

At this point a new symbol and three super-scripts have to be explained:

Δ_i^r . . . the contribution per unit of the i th item to profit and costs (for sub-period r); the super-script "max" refers to the *maximum* (capacity) of a certain material or labor factor (in a certain department) or of an inventory level permissible for a certain raw material; corresponding to the latter the super-script "min" refers to the *minimum* inventory level. The asterisks in the last equation merely indicate that I and P refer to *completely* finished goods and are not (as previously, cf. key to symbols) determined on an equivalent unit basis.

The reader will have noticed that the concept Δ_i^r (or in Stedry's notation c_i) is a

¹⁶ In comparing Stedry's model [see below] the reader will notice that the above maximization model has not only been translated into our symbolism but also had to be adjusted somewhat to make it conform to the structure of our aggregation model.

Maximize:

$$\sum_i (c_i y_i - \sum_{j \in q_i} \sum_k c_{ijk} x_{ijk})$$

subject to:

$$\sum_k x_{ijk} - y_i = 0 \quad i = 1, \dots, m \quad j \in q_i$$

$$\sum_k b_{ijk} x_{ijk} \leq b_{ik} \quad k = 1, \dots, n_j \quad j \in q_i$$

$$y_i \leq U_i$$

$$-y_i \leq -L_i$$

For the sake of comparison we have stated here the original model *without*, however, listing the pertinent key of symbols. For the latter see: *Budget Control and Cost Behavior*, p. 120. Note that in contrast to Stedry we assume above that the limitations set by machine (and buildings) capacity are incorporated in the constraints set by $N_{id}^{r \text{ max}}$ and $L_{id}^{r \text{ max}}$, hence do not need separate consideration.

contribution margin, which however is not identical to the contribution margin of direct costing. By employing such a concept Stedry circumvents the difficulty of incorporating some overhead costs in his model. This, of course, does not solve the overhead cost problem but only shifts it to another level (a level outside the maximization model). It should be added that Stedry offers concrete suggestions for computing his maximization model by means of a linear programming approach with "diadic" arrangement.¹⁷

In this connection we ought to draw the reader's attention to another proposal made by K. J. Arrow,¹⁸ who also emphasizes departmental profit maximization. Arrow shows under which circumstances suboptimization can lead to overall optimization and presents concrete suggestions for using interdepartmental *shadow prices* for the attainment of this goal. He furthermore recommends for the purpose of determining the profit maximum step-by-step approximations—eventually by means of computing machines—but does not rely, as Stedry does, on linear programming methods. Arrow's paper pivots around the question whether and when decentralization within a firm is possible and thus illuminates the problem from an entirely different point of view. Some of the results of this study, however, seem to be relevant to our problem and shall shortly be summarized.

Under perfect competition and absence of purely "internal goods" (those not available in the market) the optimum policy for the firm is simply to instruct each process manager independently to maximize profits, computed at market prices. "There may indeed be problems of control to insure that maximization does take place and it is clear that such problems present a challenge to the accounting procedures as well as incentive schemes."¹⁹ If, however, internal goods

that are not traded in the market, are admitted, we can again have decentralization by instructing the manager to maximize a *shadow profit*, that is, the profit computed by valuing the commodities at their market price and the internal good at its shadow price which can be found through a process of successive approximations. "Let some central agency within the firm announce a tentative shadow price for the good which is used only internally. Then let the manager of each process maximize his shadow profit, as given by formula 8 [here not reprinted]. As a result, it will be found in general that the total amount demanded of good 3 [the internal good] within the firm is greater or less than the amount available. These demands and supplies are forwarded by the process managers to the central office. If the demand in total exceeds the supply, the shadow price is raised for the next period; otherwise it is lowered. This provides a new shadow price, on the basis of which the process managers again optimize. It can be shown, under certain conditions, that if this process is continued long enough, the operations of the firm will gradually converge to a position of maximum total profitability."²⁰ Under imperfect competition complete decentralization is not possible, since there has to be some single agency to supply the marginal revenues which are affected by the actions of the process managers. "It would not be correct to allow each process manager to maximize his profits taking account of the effect of his output on his own prices but not taking into considera-

¹⁷ Charnes, A., W. W. Cooper and M. H. Miller, "Dyadic Problems and Sub-Dual Methods" (mimeo) Carnegie Institute of Technology (cited from Stedry, *idem*.)

¹⁸ Arrow, Kenneth J., "Optimization, Decentralization, and Internal Pricing in Business Firms," in *Contributions to Scientific Research in Management Proceedings of the Scientific Program following the dedication of the Western Data Processing Center, Graduate School of Business Administration, University of California, Los Angeles, 1959*, pp. 9-18.

¹⁹ *Ibid.* p. 12.

²⁰ *Ibid.* p. 13.

tion the effect of his output on the prices received by the other process manager."²¹

Practical Application and Conclusion

At this stage the reader who is not familiar with the application of mathematical models for practical purposes and with computer simulation may ask: how can the budgeting model, presented in this paper, serve a particular purpose in actual practice? We will try to answer this question by indicating the various steps necessary for the implementation of such a simulation system.

1. The existing budgeting system will have to be examined and translated into mathematical terms, step by step, each sub-budget for itself as shown in the previous model. One must not forget that our model is only an illustration, and the idiosyncrasies of each individual budgeting system have to be reflected through appropriate choice of variables, parameters, and model structure. If desired, one might, at this point, consider certain changes that improve upon the structure of the previously available budgeting system. It also must be taken into consideration that in our presentation we received the benefit afforded by the application of general sub- and superscripts like i ($i=1, \dots, n$), j ($j=1, \dots, r$), etc. For practical purposes, however, each sub- or superscript must be spelled out; this increases immensely the number of variables, parameters, and equations. Finally, it must be borne in mind that in our exposition we have selected only a few equations—namely the more interesting and significant ones—out of a whole system of simultaneous equations. Such a system must be tested for determinacy (ordinarily the number of independent equations must be equal to the number of endogenous variables).

2. The complete model now has to be translated into machine language, con-

veniently by way of an automatic coding system and the necessary flow diagrams (beware that not all coding systems are suitable for our model; e.g., the most frequently applied IBM-FORTRAN language cannot be used without difficulties since it permits only three dimensions while our model uses four). In writing the computer program, attention has also to be paid to some of the items listed below.

3. Values must be assigned to the exogenous variables and to the parameters, based on the data, estimates, forecasts, and past experience of the enterprise. In this connection it has to be decided which of the alternative business situations shall be computed; that means which exogenous variables (and perhaps even parameters, although in this case the distinction between exogenous variable and parameter might become vague) shall be varied and within which ranges shall that be done. This of course involves the decision which exogenous variables shall be varied with each other. That is to say one has to decide how many combinations of "basic alternatives" shall be computed. Hence in many cases a whole set of values will have to be assigned to a single exogenous variable.

4. After this preparatory work the computation in the electronic data processing system can be carried out and the output should yield the budgeting data of the firm simulated under a large number of different conditions. These conditions may partly depend on the entrepreneurial policy, or on external, and in many cases uncontrollable, conditions. The computer output can be arranged in such a way as to print a sales budget, a production budget, etc. and finally a cash budget as well as projected position and income statements each of them with all desired alternatives. The selection of that alternative which

²¹ *Ibid.* p. 15.

appears to be most satisfactory (with regard to the controllable exogenous variables) can be done by visual inspection and comparison of the various alternatives. In case of too large a number of alternatives (especially where one cannot rely on a limited number of key figures as for example, net profit, sales volume, asset and capital structure, liquidity ratio, etc., for selection of the most satisfactory alternative) it should be feasible to complement the program with satisficing criteria such that the computer selects automatically the most "satisfactory" choice or a more limited number of "best" alternatives from which the top executives can make their own selection.

5. Finally, in case of internal or external changes of data during the business year a re-computation with the newly assigned values (of exogenous variables or parameters)—but the original computer program—can be carried out. In this way a revised budget can be calculated rapidly; furthermore one can afford to compute revisions more frequently than this is possible under present circumstances.

Using electronic computers, the calculation of even a large number of alternatives should not be very time consuming and the suggested method is by no means restricted to firms in possession of an EDP-system. Computations outside the enterprise, at statistical service or consulting firms, should be within the range of feasible expenses and will facilitate the general application of the proposed approach. Obviously the models presented here are designed for use in connection with a *digital* computer; however, the application of *analog* computers to budgetary and related managerial planning might offer decisive advantages (less expensive, handier, more compact and concise data, etc.) and deserves serious consideration. Since the output of analog computers can best be arranged in the form of a graph, it

is conceivable to arrange this output in the form of a *multi-dimensional* break-even chart. Thus, with the help of a somewhat modified model and the necessary input data, the analog computer would be in a position to supply a set of diagrams containing whole families of cost, revenue and profit curves, offering information of different alternatives for one and the same purpose as well as for different managerial goals. Proposals for improving and expanding the application of break-even charts as made by Dean,²² Eiteman,²³ Barber,²⁴ and others may in this way approach a fuller realization. Dean's assertion that "break-even analysis has not measured up to its potential usefulness, but it can if it embodies these kinds of cost forecasting and thus becomes a versatile device for flexible comparison of conjectural income statements under a variety of projected conditions"²⁵ still holds.

So far we have assumed that most of the data are being supplied by the individual departments without worrying about the way in which these data were created—that means we have gone only as far as text-book budgeting reaches. If, however, the budgeting activity on the departmental level shall be incorporated into the simulation approach it will be necessary to develop a model, perhaps even a maximization model à la Stedry, for each department. Thus many of our previous exoge-

²² Dean, Joel, "Methods and Potentialities of Break-Even Analysis," *The Australian Accountant*, October-November 1951, Reprinted in *Studies in Cost Accounting*, ed. by David Solomons (London, 1952), pp. 227-66.

²³ Eiteman, Wilford J., "Application of Break-Even Charts to Cash Situations," *The Controller*, June 1951, reprinted in *Readings in Cost Accounting, Budgeting and Control*, ed. by W. E. Thomas (2nd edition, Cincinnati, 1960), pp. 472-75.

²⁴ Barber, Raymond J., Jr. "When does Part of a Business Break Even?" N.A.C.A. Bulletin, May 1951. Reprinted in *Readings in Cost Accounting, Budgeting and Control*, ed. by W. E. Thomas (2nd edition, Cincinnati, 1960), pp. 463-471.

²⁵ Dean, Joel, "Methods and Potentialities of Break-Even Analysis" *The Australian Accountant*, October-November 1951, Reprinted in *Studies in Cost Accounting*, ed. by David Solomons (London, 1952), pp. 227-66.

nous variables will have to be converted into endogenous variables and a long array of new exogenous variables will emerge; needless to say, this increases considerably the number of simultaneous equations and complicates the program. If departmental optimization models shall be used it may be advantageous to compute these departmental optima independently from, and prior to, the overall budget model. This *independent* treatment, however, is probably not feasible if an *overall* optimization by way of inter-departmental prices and shadow prices à la Arrow is intended. This second or extended stage of budgeting simulation will have to be experimented with at some length before detailed recom-

mendations can be made. In the long run, this second stage will, however, become as important as is the first. Finally, it is hoped that in time the two extreme approaches of simulating the firm, the "flow model" on one side and the budgeting model on the other, will move towards each other. Then we may hope for the day when it is possible to fuse them to such a degree that an economic model of the firm emerges which corresponds to the needs and facilities of a particular enterprise without being unsound from the viewpoint of hypothesis formulation. This no doubt is a dream at present, but where would we stand today had our ancestors failed to indulge in their own dreams?

PROPOSALS FOR IMPROVING FUNDS STATEMENTS*

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IT is generally agreed that the purpose of any financial statement is to present useful information for decision-making by its readers. The growing popularity of the sources and applications of funds statement (hereafter referred to as the funds statement) indicates that this report presents information which is not readily found in the typical income statement or balance sheet.

In meeting this need, accountants should determine what information is desired by readers of funds statements and then should design an appropriate report. An examination of the writings of financial analysts, investors, accountants, managers, and others indicates that they seek answers to the following types of questions: What has become of the profits of the period? Why were not dividends or wages larger, in view of successful operations? What were the major financial policies and changes during the period? Were funds for replacement or expansion generated internally or were outside sources relied on? What detailed form did the major sources and uses of funds take? What is the financial strength or solvency of the company? (Many of these questions will also appear in the future tense as well as in the past, indicating a need for pro-forma as well as historical statements.)

Unfortunately, the currently popular form of funds statement, which is based upon the working capital definition of funds, has certain defects which seriously limit its utility for answering these types of questions. As the funds statement becomes more widely adopted—it soon may become an accepted part of annual reports to

stockholders—danger exists that opinion will crystallize prematurely on working capital as the classical definition of funds. The purpose of this paper is to examine several deficiencies in the working capital approach and to develop a more satisfactory definition of funds as well as an improved form of statement.

HISTORICAL BACKGROUND

A brief historical sketch, based upon original sources and the extensive work of Gregory and Wallace in 1952,¹ will serve as background in pointing out the shortcomings of the working capital approach in the preparation of funds statements.

The funds statement is relatively young. Its birth is usually dated as 1908, the year in which William Morse Cole suggested a "Where-got, where-gone" statement. He later used a more conventional but still literal title, "Summary of Balance Sheet Changes," and presented the statement in two parts. One was headed "Sources of Values" (for increases in equities and decreases in assets), and the other "Application of Values" (for increases in assets and decreases in equities).

Apparently between 1908 and 1921 the statement had also come to be called the statement of *resources* and their application. In an unofficial answer to a CPA exam question which called for this new

* The author gratefully acknowledges the aid of a senior thesis student, Richard A. Morley, who processed the survey sample of small West-Coast corporations under a grant-in-aid from the Security-First National Bank of Los Angeles, Riverside Division.

¹ Robert H. Gregory and Edward L. Wallace, "Solution of Funds Statement Problems—History and Proposed New Method," *Accounting Research*, April, 1952, Vol. 3, No. 2, pp. 99-132.

statement, Finney presented a solution which included a "Statement of Application of Funds," in which his "Funds Provided" and "Funds Applied" titles referred to the same items which Cole had called "Sources of Values" and "Application of Values." Notice that here we have the introduction of the word *funds* for the first time.

What was the meaning of "funds" at this juncture in history? In later controversies over his meaning, Finney stated that the concept funds was not limited to cash; that it was broader and was synonymous with resources. However, he did not clarify whether he meant gross or net resources.

Unfortunately the controversy did not stop with clarification of this point. This would have avoided a great deal of confusion and probably resulted in a much more useful statement today. Improvements could have been concerned with bringing in explanations of complete changes in balance sheet items and with showing the details of changes in working capital. Cole had already made a start in this direction, but his impressive beginning was not strongly supported. Even Henry Rand Hatfield in 1927 went along with showing net changes only, and writing in his delightful manner concerning the title of the statement stated: "Professor Cole in the first edition of his *Accounts* uses the title "Where-Got-Gone" statement, but this has apparently been abandoned even by its author. It is a source of regret that a colorful term introduced into the drab literature of accounting should have fallen into disuse. But it hardly seems the function of this treatise to serve as an asylum for a foundling abandoned by its progenitor."²

In the intervening years the original broad concept of funds as resources has gradually shifted and become much nar-

rower. Today funds are regarded as being a pool—a pool of cash, of quick assets or quick assets minus current liabilities, or most commonly of net working capital. In addition to being used by over one-half the practitioners, it has been found that almost all modern textbook writers accept and support the net working capital definition of funds.

A contemporary accounting scholar, Louis Goldberg, strongly dissented from this acceptance in 1951, stating that "the shift in emphasis has been in the wrong direction and that the earlier concepts were more cogent, more satisfying and more rational."³ The present writer heartily agrees with this opposition. Goldberg took the reasonable position that it is necessary to have a concept of funds which will prove satisfying *in all cases*. Because only one limited pool of funds may be chosen at a time, the concept of funds as a "pool" makes it exceedingly difficult to decide which pool to choose. Once one is chosen, other information and emphasis must be sacrificed.

Which should be chosen, a current fund such as the cash fund, the securities or investment fund, the working capital fund, or a fixed fund such as the capital fund? Should some of these funds be combined? Should they be shown gross or net after the subtraction of some or all liabilities? Somehow, out of all of these possibilities the net working capital fund is becoming generally accepted, with a few purists holding out for cash, and an occasional scholar pointing out the superior merit of an intermediary position.⁴

² Henry Rand Hatfield, *Accounting Its Principles and Problems* (New York, N. Y., 1927), footnote 2, page 460.

³ Louis Goldberg, "The Funds Statement Reconsidered," *THE ACCOUNTING REVIEW*, October, 1951, Vol. XXVI, No. 4, p. 485.

⁴ See, for example, Maurice Moonitz, "Reporting on the Flow of Funds," *THE ACCOUNTING REVIEW*, July, 1956, Vol. XXXI, No. 3, pp. 375-85.

SURVEYS OF MODERN FUND
STATEMENT PRACTICES

A major survey of modern fund statement practices was made in 1951 by Anton.⁵ Points pertinent to this paper follow. His study showed that 50% of the companies sampled used the working capital definition of funds, twice as great as the nearest rival, cash, at 25%. He also found that only 43% of small corporations with assets under \$5 million prepared the statement, and that only 6% of these presented them to stockholders.

No large sample has been reported since. In 1959 we conducted a limited investigation of small West-coast corporations regarding their use of funds statements in financing. Limited time and funds necessitated a narrow scope for the study, so the sample was limited to the 143 small corporations listed in *Walker's Manual of Pacific Coast Securities*.⁶ Total responses, after a follow-up letter, were 60, which represents 42%. Several relevant points were discovered:

1. 40 of the 60 respondents, or 67% made use of the funds statement. This is significantly higher than the 43% found by Anton in 1951. Although geographical differences may account for some of this increase, no sampling reasons could be found to account for such a large change. It is quite probable that the increment is significant and widespread.
2. 31% of the respondents present the funds statement to stockholders. This also is significantly different from the 6% figure reported by Anton; it suggests that a representative sample might now indicate a nationwide increasing trend—which hopefully will continue.
3. 50% of the respondents reported that they use the working capital definition of funds. However, when alternative forms of the fund statement (prepared with the new definition of funds to be developed below) were presented, only 27% chose the conventional statement based upon the working-capital definition. A certain contradiction or dissatisfaction was evident.

DEFICIENCIES OF THE GENERALLY
ACCEPTED FUNDS STATEMENT

Most of the deficiencies of the currently popular form of funds statement, as exhibited above, stem from the definition of funds as net working capital. Similar shortcomings may be attributed to most definitions of funds which involve the pool concept.

In the first place, the concept of a pool of net working capital is difficult for many, especially laymen, to comprehend. The pool of current assets minus current liabilities is a combination of disparate items, and it sometimes changes in size without any apparent flow of funds. For example, net working capital declines when a successful corporation recognizes that it owes the government current income taxes; yet it is not easy to view this as a source of application of funds—which the orthodox statement does. Working capital has become a widely adopted term, but it is doubtful if it is as fully understood as many would like to believe.

A much more important deficiency is that changes in specific current asset or current liability items may be among the most important sources or application of "funds" (in a meaningful sense), but they are omitted from the orthodox statement. A shift out of cash into inventories, voluntary, or vice versa, might be one of the most significant financial changes during a period. Similarly a large decline in notes payable and increase in open accounts, or vice versa, may foretell an important change in financial or credit policy. These and analogous types of changes within working capital are not revealed in the orthodox statement.

Two answers are sometimes offered to

⁵ Hector R. Anton, "Funds Statement Practices in the United States and Canada," *THE ACCOUNTING REVIEW*, October, 1954, Vol. XXIX, No. 4, pp. 620-7.

⁶ Walker's Manual Inc., *Walker's Manual of Pacific Coast Securities*, 1958 (San Francisco, California, 1958).

cover these omissions but both appear inadequate. One is that these changes may be found in the comparative balance sheets. This is true, but in addition to being unobserved or difficult to find, it means that the statement does not meet its avowed purpose of showing these specific "fund" flows. Another answer is that the details of the net working capital changes should be appended to the statement. This may be a satisfactory solution for managerial statements, but probably would make the statement too complicated for reports to stockholders. In addition, it is well known that this solution is not being observed in practice.

Even if one is willing to solve the above deficiencies by the issuance of lengthy and complicated funds statements in order to retain the pool of net working capital concept, a further important deficiency must be considered. Some financial changes, fund flows if you will, must be completely ignored under this definition. A purchase of plant or equipment by means of a long-term mortgage or the donation of land to a corporation involves significant sources and uses of "funds." These and other analogous transactions do not involve working capital and therefore must be omitted. Similarly, expirations of prepaid expenses, bad debt expense estimates, and current expense accruals, by lowering net income, are treated as applications of funds; yet they are only internal transactions which do not involve flows of funds in or out of the business. Therefore their inclusion in the statement, even if net working capital does change, appears dubious.

At a different level, the orthodox funds statement is weak because it incorrectly shows depreciation expense as a source of funds. That a decline in the value of fixed assets cannot be a source of funds, that revenues are the true source of funds, and that in funds statements depreciation

expense is really an adjustment to the net income figure (to arrive at a figure which is equal to revenues less expenses requiring funds) are facts well known to all who have thoughtfully considered this problem. Yet the confusing method of reporting depreciation as a source of funds persists. This also should be corrected.

AN IMPROVED CONCEPT OF FUNDS

Instead of carrying the pool concept to its logical conclusion and defining funds as cash, it is proposed that we revert to Cole's and Finney's original broad view of funds as resources, i.e., as all assets or purchasing power. Cash would certainly be a satisfactory definition of funds from a logical point of view, but the concept is too narrow. Many changes in what are broadly viewed as funds would necessarily be omitted under this definition. Since knowledge of cash flows is important, however, it seems that the customary statement of cash receipts and disbursements would be preferable to the funds statement in revealing this information. The former shows detailed changes in cash and would be useful both as an historical and as a planning report. Management would find this more helpful for decisions concerning cash than the funds statement which is designed mainly to show overall changes as revealed by comparative balance sheets. The funds statement thus should serve a broader purpose in showing the flows of all funds rather than just cash.

In choosing resources as the term defining funds, the concept of a pool which changes in size should be completely discarded. All assets gained by an accounting entity in its dealings with outsiders are used in some manner. All sources of funds are applied; nothing is left over. The statement should show sources of funds equal to application of funds.

This broad concept of funds is not foreign, and may best be illustrated by

considering the familiar case of an opening balance sheet of a business. It might show assets such as cash, inventories, land, buildings, and equipment equal to accounts payable, notes payable, bonds payable, and capital stock. It would be correct to say that current creditors, long-term creditors, and owners had provided funds for the enterprise and that these funds were applied to provide a cash balance, to carry an inventory, and to buy land, buildings, and equipment. The total sources of the firm's funds or resources equals the total applications. Funds are thus conceived broadly as meaning assets or resources, i.e., as all purchasing power.

Subsequent transactions which change balance sheet assets affect the composition of resources. Since resources or assets change for a variety of reasons, Goldberg has suggested that only changes in assets arising from transactions with outsiders (called external transactions) be considered as fund changes and that internal changes arising as adjusting entries be eliminated.⁷ This writer agrees, but would add the further stipulation that to be included in the funds statements external transactions should also involve a *physical flow* of assets. (Movements of cash, increases in accounts receivable, and purchases of prepaid items, deferred charges, merchandise, fixed assets, intangibles, etc., may reasonably be considered as physical flows of assets in this context. Hence, externally-occasioned changes in these items, as revealed in the comparative balance sheet, should appear in the funds statement.)

Only one basic question regarding any net change revealed by comparative balance sheets need be asked under the proposed definition of funds as resources and the rule of showing only external, physical flows of assets: "Was there a physical flow of assets into or out of the business entity in connection with the balance sheet

change?" If the answer is yes, a source or application of funds should be shown in the funds statement; if no, the change should be eliminated. For example, an increase in the asset patents through a purchase, whether for cash or on credit, involves a physical inflow and should appear in the funds statement; whereas a decrease in patents, due to the write-off of an expired portion, although a change in resources, does not represent a physical flow out of the firm. The latter is an internal change only and should therefore be eliminated from the statement. Similarly the declaration of a dividend which remains unpaid would not be reported as a fund flow. Contrarily, payment of a dividend in kind, such as in shares of a subsidiary, would be an application of funds. (The orthodox statement would ignore such a dividend because working capital was not changed.)

COMPARISON OF DEFINITIONS OF FUNDS

A comparison of the "new" definition of funds as resources or assets with the customary definition of funds as a pool of net working capital may now be made. The former is more inclusive than the latter, and does not have the negative aspect of including current liabilities in the definition. Items which do not involve external physical flows of assets are eliminated under the former, whereas items which do not flow into or out of the pool of working capital are eliminated in the latter.

The criterion of eliminating internal changes under the resources definition results in the reversal of about the same non-fund changes as does the net working capital definition. In addition, items such as expirations of prepayments, bad debts estimates, and accrued receivables or payables, all of which are intuitively recognized as being non-fund changes, also will be eliminated. These internal non-fund

⁷ Goldberg, *op. cit.*, p. 487.

changes are "incorrectly" retained under the net working capital definition.

The reader may now return to the earlier list of deficiencies of the generally accepted funds statement. Every one of these will be overcome by using the resources concept of funds and the rule of including only external physical flows of assets. An increase in an accrued income tax liability, being "internal," does not appear as a source or application of funds as it does in the orthodox statement. The change in each working capital item, such as a large increase in inventories or decrease in notes payable, appears in the statement rather than being buried. A significant expansion of plant and equipment by means of a small down payment plus the assumption of a large mortgage will appear in full. (The orthodox statement shows only the down payment.) Expirations of prepaid assets will be eliminated rather than appearing as reductions in net income and working capital. Mere bookkeeping entries for accruals and the like will not be allowed to affect funds. Depreciation will not be shown as a source of funds.

It is believed that the "new" definition of funds as resources and the resulting funds statement prepared by following the rule of eliminating all internal transactions will result in a report that is more understandable, simpler to prepare, and more reasonable in that it will show all fund changes, and only meaningful fund changes. It follows that it should be more useful to consumers of the information.

It is also interesting to note that the proposed concept of funds as resources conforms closely with the definition of funds used by economists in their "social" accounting.⁸ The Federal Reserve System's Quarterly "Flow of Funds Accounts" shows the details of both current and fixed (and financial and non-financial) sources and uses of funds.⁹

PROPOSED NEW FORM OF FUNDS STATEMENT

Based upon the resources definition of funds, the new form of the funds statement should show that the sources equal the applications of funds. The following two Exhibits present the missing details of individual working capital item changes. They differ only in that Exhibit A treats depreciation as an adjustment of net income in order to arrive at the correct source of funds provided by profit-seeking operations, whereas Exhibit B omits depreciation entirely by showing the revenues which provided funds and the expenses which required funds. Exhibit B gives more information and logically is probably superior to Exhibit A, although the latter ties in with the income statement figure and has the appeal of familiarity.

Except for showing funds provided by profitable operations as the first item in the sources section and dividends paid as first in the applications section, the items in Exhibits A and B are arranged in the order of magnitude. Other possibilities exist. An interesting possibility in the sources section, for example, would be to show captions for internal sources and external sources. The latter could then be further subdivided as to current borrowing, long-term borrowing, preferred stock issues and common stock issues. Functional divisions within the applications section are also possible. Clarity and utility should be the guiding principles for grouping items in the statement.

Exhibits A and B follow (*see next page*).

Note that depreciation was added back to net income as an adjustment in Exhibit A. This form may therefore be regarded as a "compromise" which includes less information.

⁸ Powelson, John P., *Economic Accounting* (New York, N. Y., 1955), page 84.

⁹ Board of Governors of the Federal Reserve System, *Federal Reserve Bulletin*, August, 1959, pp. 828-59.

Exhibit A

*Sources and Applications of Funds
as Revealed by Comparative Balance Sheets
For the Year Ended December 31, 1960
(Dollars in Millions)*

Sources of Funds:

Profitable Operations:	
Net Income per Statement.....	\$14
Adjustment of Depreciation and other internal transactions.....	7
Total funds provided by profitable operations.....	\$21
Proceeds of Bond Issue.....	30
Increase in Payables to Current Creditors.....	26
Drawing Against Bank Balance.....	10
Issue of Common Stock.....	5
Sale of Equipment.....	2
Total Sources.....	\$94

Applications of Funds:

Payment of Dividends.....	\$ 6
Increase of Inventories.....	40
Increase in Receivables Balances.....	24
Purchase of Equipment.....	12
Payment of Notes Payable.....	10
Purchase of Treasury Stock.....	2
Total Applications.....	\$94

Exhibit B

*Sources and Applications of Funds
as Revealed by Comparative Balance Sheets
For the Year Ended December 31, 1960
(Dollars in Millions)*

Sources of Funds:

Sales.....	\$234
Proceeds of Bond Issue.....	30
Increase in Payables to Current Creditors.....	26
Drawing Against Bank Balance.....	10
Issue of Common Stock.....	5
Sale of Equipment.....	2
Total Sources.....	\$307

Applications of Funds:

Purchase of Materials and Services.....	\$167
Salaries.....	40
Income Taxes.....	6
Payment of Dividends.....	6
Increase in Inventories.....	40
Increase in Receivables Balances.....	24
Purchase of Equipment.....	12
Payment of Notes Payable.....	10
Purchase of Treasury Stock.....	2
Total Applications.....	\$307

mation than does Exhibit B, but which does reveal the source of funds from operations. Showing the internal sources of funds possibly may be more important than detailing the income statement fund flows. (Perhaps deducting dividends from the "funds provided by profitable operations" figure to arrive at the source of funds from retaining earnings would offer a pleasing, useful alternative.)

CONCLUSIONS

Although our 1959 Pacific Coast survey was too restricted to permit nationwide generalizations, it hints that a current survey of this scope would reveal: (1) that although the net working capital concept of funds is predominant, it is still not generally accepted, (2) that the presentation of the funds statement to stockholders is increasing, and (3) that an improvement in the statement is sought. It is hoped that this study soon may be undertaken.

Based upon theoretical and utilitarian premises, it is urged that the concept and definition of funds be broadened to include all resources or purchasing power. Because the net-working-capital-pool concept of funds was found to be too restrictive, it should be abandoned. All external, physical flows of assets into or out of a firm, as revealed by comparative balance sheets, should appear in the funds statement. Internal changes should be eliminated.

It is also suggested that the form of the funds statement be designed (1) to show the total sources of funds equal to the total applications, (2) to include as fund changes the details of significant movements in working capital items, and (3) to show depreciation and other revenues or expenses arising from internal adjusting entries as adjustments of the funds arising from profitable operations rather than as sources or applications of funds.

Implicit in all the above was acceptance of the great importance and utility of the

funds statement. In order to bring about its general use a final suggestion is made. The fund statement should be accepted by management and national accounting bodies as one of the major financial reports. It,

along with the balance sheet, the income statement, and the analysis of retained earnings would be certified by the independent public accountants in the annual reports to stockholders.

NONACCOUNTING FOR NONINSURANCE

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THE idea that a cost should be reported even though none occurred seems to have little to commend it; yet, two of the three articles dealing with accounting for noninsurance that have been published in *THE ACCOUNTING REVIEW* during the last ten years suggest reporting an expense for insurance not carried.¹ And Professor Brock reports that a substantial number of companies make a hypothetical charge to expense for noninsurance.² In this short paper, I propose to show that this is not a useful practice.

COST

The question before us is, "Does failure to carry fire and casualty insurance involve a cost if the hazards in question do not occur in the accounting period? The first step in solving the problem is to define cost. The general meaning of cost is sacrifice, or in economic terms, undesirable change in value. Which value changes are undesirable depends on the point of view adopted. To a proprietor, decreases in assets and increases in liabilities are undesirable. To the business entity, increases in owners' equities in connection with contributions of capital to the business may be viewed as costs, along with increases in liabilities and decreases in assets, but a genuine entity point of view is seldom adopted by accountants. From the residual equity point of view, preferred stock outstanding is a liability, and increases in liabilities, like decreases in assets, are costs. This third meaning of cost is the one that will be adopted for use in this paper.

The widespread loose usage of the term "cost" probably is one of the causes of the confusion about "self-insurance." One too

often hears of "costs" being carried forward on the balance sheet; some writers even refer to "expired costs" and "unexpired costs" as if costs could exist. Costs do not exist; they happen. Cost is a dynamic concept, a term for a change. Assets can not be costs. They may be *measured* at cost, i.e., they may be reported at the amount of the cost that was incurred in obtaining them, but they can never be costs, unexpired or otherwise.

Expense is one category of cost, a category that is too difficult to define well in a short paper. Losses, production costs, and purchase costs are examples of other categories. The boundaries of these classifications are not of great concern here, because the major point of this article is that there is no cost at all if there is no destruction of uninsured assets.

EFFECT OF NONINSURANCE

Having defined cost, the next step is to ascertain if not insuring assets involves a cost, i.e., is there a decrease in an asset or an increase in a liability? First, let us consider the possibility that there is a decrease in an asset. Assets are generally considered to be service potentials. Using the identical company test, is the service potential of the insured building owned by Company A any greater than the service potential of the uninsured, but otherwise identical, building owned by Company B? The two buildings promise equal series of

¹ Bernard F. Magruder, "Nature of Reserve for Self-insurance," *THE ACCOUNTING REVIEW*, XXVI (1951), 334-7. William H. Whitney, "Insurance Reserves in the Accounts of Non-insurance Companies," *THE ACCOUNTING REVIEW*, XXXIV (1959), 37-43. Horace Brock, "Accounting for Self-insurance Against Fire Loss—Theory v. Practice," *THE ACCOUNTING REVIEW*, XXXIV (1959), 257-61.

² *Ibid.*

housing services, but the insured building has an additional potential, viz., some probability of paying off in dollars upon being destroyed. Surely this probability of a dollar pay-off is of some value, so Company A should report a greater value on its balance sheet. The customary way of doing this is to report a separate asset, the common title being "Prepaid Insurance."³ As the remaining life of the policy decreases, the value of this probability distribution decreases. As the policy expires, the service potentials of Company B's building, and of Company A's building together with the decreasing probability of insurance receipts, approach equality. The only difference in service potential is that difference that is reflected in the asset "Prepaid Insurance." The uninsured asset does not decrease in value in relation to the insured asset as the months go by.

Is a liability increased because the firm holds uninsured assets? Liabilities are commonly thought of as obligations to others which will require the relinquishment of assets. Liabilities may be definitely established in terms of a future money disbursement, or they may consist of only a probability of a future outlay of money or other assets, as in the case of an estimated liability on a product warranty, or an estimated liability for future income tax on earned revenue not yet reported on a tax return. But they always involve some legal basis for a probable future transfer of assets to another party. The businessman's instinct for preserving his assets insures that no prospective future transfer of assets can be considered definite enough to report on a balance sheet unless the other party has a legal basis for his claim or probability of a claim.

Failure to insure assets does not establish any probability of becoming obligated to another party. Failure to insure does eliminate the probability that the owner will collect from an insurance company;

this absent probability is reflected in the balance sheet by the absence of the prepaid insurance item. But, destruction of the uninsured asset will not result in an obligation to another party.

The elimination of the asset may result in a decision to incur an obligation in connection with its replacement. But this type of obligation is just as likely to be undertaken regardless of the circumstances of the asset's demise. Whether it wears out, burns down, becomes obsolete, spoils, or is sold to a customer, it is likely to be replaced, and the replacement is likely to involve an obligation to another party. None of these possible obligations should be recognized as liabilities until there is some legal support for them. If one were to recognize any one of these possible declines in value as a liability, consistency would dictate a similar treatment for the others.

CONCLUSION

The plain fact of the matter is that some accountants, in their zeal to make net income a steadier, more dependable basis for predicting future income, have shown as a smooth expense something that is not a cost at all and have omitted from the income statement the irregular, genuine costs. Recognition of the value of information about the firm's net recurring income should be encouraged; that figure is one of the most useful data an accountant can provide to those who must make investment decisions. But to show as recurring an item of cost that is actually erratic is to report the results one would like to see rather than the value changes that actually occurred.

The solution is to make a sharp distinction in the financial statements between

³ Note that the justification for showing prepaid insurance as an asset is that the insured has a probability of a cash receipt from the insurer. To include as an asset an item that has no service potential merely because of a desire to spread the effect of a cost over several periods would be inexcusable.

recurring and nonrecurring changes in net worth. The former should be reported on a "Statement of Recurring Income"; the latter belong on a "Reconciliation of the Common Stockholders' Equity" along with corrections of errors, the net recurring income, and transactions with residual equity-holders. This separation of state-

ment functions would help make it clear that reporting as an expense a hypothetical cost together with failure to report true casualty losses is a combination of practices that cannot give the reader of financial statements the correct impression of the effects upon the firm of the period's events.

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A USE OF PROBABILITY AND STATISTICS IN PERFORMANCE EVALUATION

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IN THE modern business enterprise, a widely used technique for performance evaluation is the budget (the term budget as used here includes standard cost systems). The budgeting procedure consists of (1) setting a standard or budgeted amount for each cost classification for the coming period; (2) comparing actual performance with the budget or standard; (3) reporting and analyzing the variances of the actual performance from the budgeted performance; and (4) taking action consistent with the analysis (for example, removing the cause of unfavorable variances).

In the third step of this procedure, one of the most important problems that arises is to decide when a variance is worthy of investigation. If the variance is small in amount or results from noncontrollable factors, or if future operations would not improve even if the cause of the variance was determined, management would prefer not to waste time and money investigating such variances. On the other hand, if investigation will result in substantial future savings and more efficient operations, management will probably want the variance investigated.

The problem of when to investigate is an important part of the control process. The best conceived budget or control procedures will be ineffective unless the decision of when to investigate a variance is made in a reasonable manner. Yet, this problem

has received little attention in the accounting literature. The traditional discussion of the problem is in terms of business judgment and intuition. The purpose of this article is to describe a quantitative model for solving the decision problem of when to investigate a variance. The model to be discussed draws on some concepts related to probability and statistics. These concepts will be briefly developed and explained as they are needed.

Decision Factors

In deciding whether or not to investigate a variance, the following factors should be considered:

- 1) The probability that the variance resulted from random, noncontrollable causes.
- 2) The reward which will result if a variance is investigated, together with the associated probability of this reward.
- 3) The cost of investigation.

The model to be discussed will incorporate the above factors.

The General Procedure

In establishing the budget for the coming period, management would be required to establish a budgeted amount and the probability distribution of the actual cost about the budget amount. Suppose the cost item in question is the cost of secretarial services in a particular division of the company. The person responsible for the budget would be required to sub-

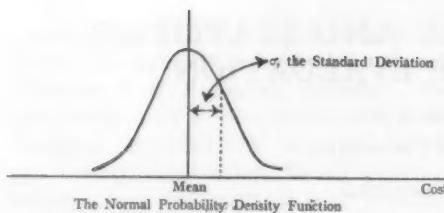


FIG. 1

mit a budgeted amount for the coming year. This amount is, in a sense, an *expected* amount or an average (mean) expected expenditure. The amount would be set assuming normal efficiency and so that variances from this mean because of random, noncontrollable causes are equally likely to be on either side of the budgeted mean.

With this specific instruction, the amount to be budgeted is defined. This amount may be somewhat different from the amount which is usually budgeted. For example, it is sometime argued that the budget should be set at a high level of efficiency. In such a case, the variance that results is generally unfavorable. Actually, if this latter budget philosophy is desired by management the model being presented could be modified accordingly. However, if the budget mean is established so that unfavorable and favorable *random* (non-controllable) variances from this mean are approximately equally likely, it is possible to fit a normal probability distribution to the expected cost for the coming period.

Based on this probability distribution, acceptable ranges for cost variances can be established and the probability that any variance, regardless of amount, has resulted from random causes can be determined.

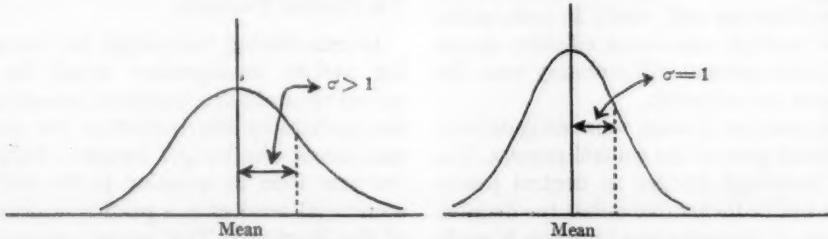
The Normal Probability Distribution

At this point, a short discussion of the normal probability distribution is offered before applying it in the cost control model.

The normal distribution has a probability density function which is a smooth, symmetric, continuous, bell-shaped curve as shown in Figure 1. The area under the curve sums to 1. The curve reaches a maximum at the mean of the distribution and one-half the area lies on either side of the mean.

On the horizontal axis is plotted the values of the appropriate unknown quantity; in our model the unknown is the amount of cost for the coming period.

A particular normal probability distribution can be completely determined if its mean and its standard deviation, σ , are known. The standard deviation is a measure of the dispersion of the distribution about its mean. The area under any normal distribution is 1, but one distribution may be spread out more than another distribution. For example, in Figure 2, both normal distributions have the same area and the same mean. However, in one case the σ is 1 and in the other case the $\sigma > 1$. The larger



Normal Probability Distributions with Different Standard Deviations

FIG. 2

the σ , the more spread out is the distribution. It should be noted that the standard deviation is not an area but is a measure of the dispersion of the individual observations about the mean of all the observations—it is a distance.

Since the normal probability distribution is continuous rather than discrete, the probability of an event cannot be read directly from the graph. The unknown quantity must be thought of as being in an interval. Assume, for example, that the mean cost for the coming period is \$10,000 and the normal distribution appears as in Figure 3. Given Figure 3, certain probability statements can be made. For example:

1. The probability of the actual cost being between \$10,000 and \$11,000 is .20. This is shown by area C. Because of the symmetry of the curve, the probability of the cost being between \$9,000 and \$10,000 is also .20. This is shown by shaded area B. These probabilities can be given a frequency interpretation. That is, Area C indicates that the actual cost will be between \$10,000 and \$11,000 in about 20% of all cases.
2. The probability of the actual cost being greater than \$11,000 is .30 as shown by area D.
3. The probability of the cost being greater than \$9,000 is .70, the sum of areas A, B, and C.

Given a specific normal distribution, it is possible to read probabilities of the type described above directly from a normal probability table.

Another important characteristic of any normal distribution is that approximately .50 of the area lies within $\pm .67$ standard deviations from the mean; about .68 of the area lies within ± 1.0 standard deviation of the mean; .95 of the area lies within ± 1.96 standard deviations of the mean.

As was mentioned above, normal probabilities can be read from a normal probability table. A partial table of normal probabilities is given in Table 1. This table is the "right tail" of the distribution; that is, probabilities of the unknown quan-

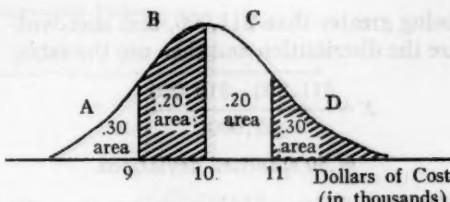


FIG. 3

tity being greater than X standard deviations from the mean are given in the table. For example, the probability of the unknown quantity being greater than .39 is .3483. The distribution tabulated is a normal distribution with mean zero and standard deviation of 1. Such a distribution is known as a standard normal distribution. However any normal distribution can be standardized and hence, with proper adjustment, Table 1 will serve for any normal distribution.

For example, consider the earlier case where the mean of the distribution is \$10,000. The distribution was constructed so that the standard deviation is about \$2,000. To standardize the distribution, use the following formula, where X is the number of standard deviations from the mean:

$$X = \frac{\text{Actual cost} - \text{Mean cost}}{\text{Standard deviation of the distribution}}$$

To calculate the probability of the cost

TABLE 1
AREA UNDER THE NORMAL DENSITY FUNCTION

<i>X</i>	0.00	0.05	0.09
.1	.4602	.4404	.4247
.3	.3821	.3632	.3483
.5	.3085	.2912	.2776
.6	.2743	.2578	.2451
.7	.2420	.2266	.2148
.8	.2119	.1977	.1867
.9	.1841	.1711	.1611
1.0	.1587	.1469	.1379
1.5	.0668	.0606	.0559
2.0	.0228	.0202	.0183

being greater than \$11,000, first standardize the distribution and then use the table.

$$X = \frac{\$11,000 - \$10,000}{\$2,000}$$

$$= .50 \text{ standard deviations}$$

The probability of being greater than .50 standard deviations from the mean, according to Table 1, is .3085. This same approximate result is shown by Figure 3, that is, area *D* is .30. Note that if the distribution is standard to begin with, the formula still holds because the mean is zero and standard deviation is 1.

The Budget Amount and The Range

Having described some of the properties of the normal distribution, it is now possible to use this distribution in the cost control model. As an example, suppose the secretarial department supervisor must establish a budget amount for the coming period. The supervisor would estimate the standard deviation by assigning subjective probabilities to possible variances from the budgeted amount. Alternatively, if he can answer a question such as the following, an estimate of the standard deviation can be made:

- (1) "If 50-50 betting odds are to be established that the cost falls within some range, it being equally likely that the cost will be above or below that range, what range of cost should be chosen?" or,
- (2) "There is a 50-50 chance that cost variances from random, noncontrollable causes will be larger than some amount. What is that amount?"

If either of these questions is answered, a budget range can be established *within which* the actual cost is expected to fall one-half the time if variances from the budgeted mean are random, noncontrollable variances.

Assume this question is posed to the supervisor of the secretarial department and the budget mean is \$10,000. Also, the

supervisor feels there is a 50-50 chance that the actual cost will be within $\pm \$600$ of the mean. This type of estimate could easily be made an integral part of the budget procedure and estimation will become easier as experience is gained.

With the information from the above questions, a probability significance range can be established using the normal probability distribution as an approximation of the expected cost performance. Remembering that about one-half the area under a normal curve lies within $\pm .67$ standard deviation of the mean, the normal probability distribution can be uniquely determined as follows:

$$2/3\sigma = \$600$$

$$\sigma = \$900$$

The mean of the distribution is \$10,000, the budgeted amount. The budget situation is shown in Figure 4.

Having identified the particular normal distribution ($\text{mean} = \$10,000$, $\sigma = \$900$), it is possible to compute the probability that secretarial costs will vary from the mean by any amount (the variance resulting from random noncontrollable causes). For example, if actual secretarial costs were \$11,800 investigation would undoubtedly be called for because a variance of \$1,800 is 2 standard deviations from the mean, i.e.

$$\frac{(\$11,800 - \$10,000)}{\$900} = 2.$$

The probability of an unfavorable variance this large or larger occurring from random,

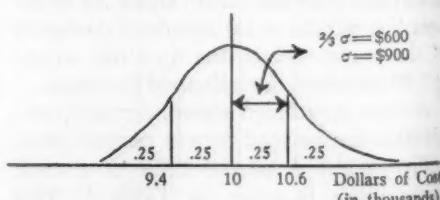
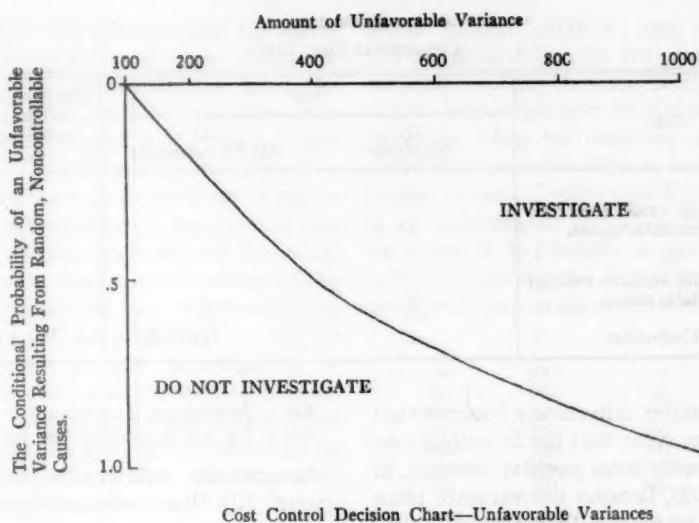


FIG. 4



Cost Control Decision Chart—Unfavorable Variances

FIG. 5

noncontrollable causes is only .0228 (see Table 1).

Is Investigation Desirable?

Two measures have been developed for deciding whether or not to investigate a variance. They are the size of the variance and the probability of the variance resulting from random, noncontrollable causes. In conventional procedure, only the first measure is usually provided.

At this point, the two measures can be combined in a manner that will suffice for many situations. Figure 5 is a cost control decision chart that provides a guide to the investigation decision in terms of the probability of the variance and the size of the variance. Figure 5 pertains to unfavorable variances. It should be noted that both favorable and unfavorable variances can be investigated. The investigation of favorable variances is designed to discourage the practice of overestimating the budgeted cost in order to have favorable variances and thus avoid investigation. Also, investigation might serve to identify

unusually capable performance as well as unusually bad performance. Although the following discussion will stress unfavorable variances, the analysis will apply equally well to favorable variances.

Figure 5 shows that either of two situations may give rise to an investigation of a cost variance. One is the occurrence of a variance which, based on budgeted mean cost and the standard deviation, is unlikely to occur. Secondly, a variance (which is not unreasonable in terms of the probability of occurrence) may be so large in absolute amount relative to the financial position of the company that it must be investigated. Thus, both the probability significance and the economic significance of the variances are important in deciding when to investigate. Both of these factors are incorporated in Figure 5.

The curve separating the "investigate" and "do not investigate" areas can conceivably be determined by management on the basis of judgement. Once the determination is made, the cost analyst has a good guide to action and both the proba-

TABLE 2
CONDITIONAL COST TABLE

States	Acts		Conditional probabilities of states given an unfavorable variance has occurred
	(1) Investigate	(2) Do Not Investigate	
(1) The unfavorable variance resulted from noncontrollable causes.	C	0	P
(2) The unfavorable variance resulted from controllable causes.	$\frac{C}{C}$	$\frac{L}{L(1-P)}$	$\frac{(1-P)}{1.00}$
Expected Cost of Act			

bility and dollar criteria are incorporated in this guide. Note that the investigate region starts with some positive amount, in this case \$100, because the variance must be equal to or greater than the cost of investigation before it is eligible for examination. Also, the probability shown in Figure 5 is conditional on an unfavorable variance having occurred.

The exact location of the curve will depend on how intensively management wishes to control costs. If the "investigate" area is made considerably larger than the "do not investigate" area, the expense of conducting cost analysis may be larger than the value of the information obtained. In setting the areas, management should equate the expense of investigation and the expected value of the information obtained. This might be done by judgment but it can also be quantified. If judgment will suffice, the quantitative method to be described will not be needed.

Derivation of the Investigate Region: Minimizing Expected Cost

The derivation of the "investigate" and "do not investigate" regions should be done on the basis of a consistent decision rule: choose that act which will minimize the expected cost. The two possible acts from which this choice must be made are as follows:

- Act 1. Investigate the variance.
Act 2. Do not investigate the variance.

Assume an unfavorable variance in amount (d). The decision—investigate or do not investigate—depends upon the probabilities of the two possible states of affairs which have caused the variance. These two states are:

- State 1—the variance was caused by factors beyond the control of management, or
State 2—the variance was caused by factors within the jurisdiction and control of management.

If state 1 is the true state, investigation is wasted; if state 2 is the true state, investigation will presumably result in a reward. The reward will be in the form of a rebate or a future cost saving. Table 2, a conditional cost table, summarizes the above information.

In Table 2, C represents the cost of investigating the unfavorable variance. This cost will be incurred if an investigation is made but will not be incurred if investigation is not undertaken. If an investigation is not made (Act 2) the cost will not be incurred. However, if state 2 is the true state, the company will incur a cost due to not investigating a variance that can be controlled. This latter cost is called L^1 . It is

¹ In situations where the inefficiency will be repeated, L should be defined as the present value of the

assumed that L is greater than C ; otherwise investigation would never be undertaken. Given an unfavorable variance, the probability of that variance resulting from noncontrollable causes is P , where $P \geq 0$. Hence, $(1-P)$ is the probability of state 2.

The expected cost of each act is calculated by multiplying each conditional cost by its respective probability and summing. The results are shown at the bottom of the table. The expected cost of investigating the variance is C i.e. $[C(P) + C(1-P)]$; the expected cost of not investigating is $(1-P)L$. If the expected cost of investigating is less than the expected cost of not investigating, the appropriate act would be to investigate. Thus, the following decision rules may be formulated:

$C < (1-P)L$, Investigate.

$C > (1-P)L$, Do not investigate.

If the expected cost of the two acts are equal the decision maker is indifferent between the two possible acts. The probability value, P_c , which establishes this equality is the critical probability that separates the two possible acts for the unfavorable variance being considered. Hence:

If P (the actual probability) $< P_c$, then $C < (1-P)L$ and investigation is warranted.

If $P > P_c$, then $C > (1-P)L$, and investigation is not warranted.

Since P_c is needed to establish the "investigate" and "do not investigate" areas, it is necessary to solve for P_c in terms of L and C . That is:

$$C = (1-P)L,$$

$$P_c = \frac{L-C}{L}.$$

The cost control group must estimate L and C for various possible variances for a

given budget activity and derive the critical probability in the manner indicated above.² If C is some fixed cost and if L is a linear function of the unfavorable deviation, then the resulting cost control chart will resemble Figure 5. For an example, assume $C=100$ and $L=d$, where d is an unfavorable variance. For different variances it is possible to determine the curve separating the investigate and do not investigate areas as follows:

$d=L$	C	$L-C$	$P_c = L-C/L$
100	100	0	0
200	100	100	.50
400	100	300	.75
600	100	500	.83
800	100	700	.875
900	100	800	.888
1,000	100	900	.90

Given these critical probabilities, the related cost control decision chart is shown in Figure 6.

An illustration of the use of Figure 6 can now be given. Assume, as in the earlier example, that the budgeted amount for secretarial services is \$10,000. The standard deviation of the normal probability distribution is calculated to be \$900. Suppose the actual cost is \$10,900. The probability of an unfavorable variance of \$900 or more is calculated as follows:

- 1) $\$10,900 - \$10,000$ _____ = One standard deviation.
\$900
- 2) The probability of being one or more standard deviations from the mean according to Table 1 is about .1587.
- 3) However, .1587 is a probability based on a scale running from zero to .5. Since a scale of zero to one is used in Figure 6, this proba-

costs that will be incurred in the future if an investigation is not made now.

² The above relationship, $P_c = L-C/L$ can be checked at the extremes to see if it agrees with common sense. For example, assume $C=0$; then $P_c=1$ and the rule would say to investigate if $P < 1.0$, which it always will be, given that an unfavorable deviation has occurred. If the cost of investigation is zero, all deviations should be investigated. At the other extreme, if $C=L$, the $P_c=0$, and the rule would say do not investigate when $P > P_c$, or $P > 0$, which will always be the case.

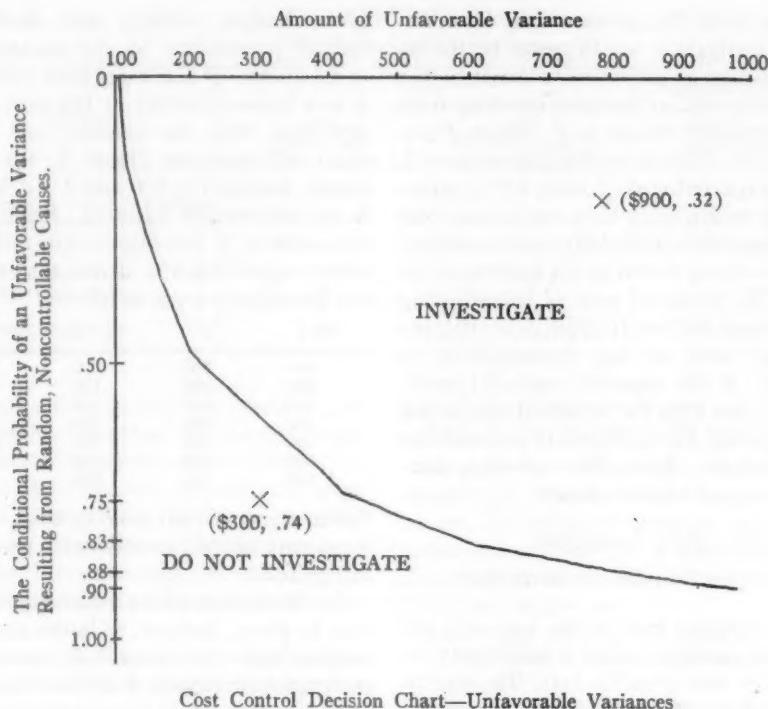


FIG. 6

bility can be converted by dividing by .5.* Hence, the probability to be used for Figure 6 is:

$$\frac{.1587}{.50} = .3174 \text{ or } .32.$$

According to Figure 6, the variance of \$900 would be investigated since the combination of (\$900, .32) falls in the "investigate" region, i.e., $.32 < .888$, the critical probability

$$\left(P_e = \frac{\$900 - \$100}{\$900} = .888 \right).$$

On the other hand, suppose the unfavorable variance was \$300.

$$1) \frac{\$10,300 - \$10,000}{\$900} = .33 \text{ standard deviations.}$$

- 2) The probability of being greater than .33 standard deviation from the mean according to Table 1 is about .37.
- 3) The applicable probability for Figure 6 is $.37/.50 = .74$

A non-recurring variance of \$300 would not be investigated since (\$300, .74) falls in the "do not investigate" region

$$\left(P_e = \frac{\$300 - \$100}{\$300} = .667 \right).$$

Summary and Conclusions

There is a need in cost and budgetary control for information on the significance of cost variances. The conventional tests

* The .3174 is a conditional probability; that is, the probability of an event, given that another event (in this case, an unfavorable variance) has already occurred.

of absolute or relative dollar magnitudes are inadequate. The probability of a variance resulting from random, noncontrollable causes is also important. By using the properties of a normal probability distribution it is possible to devise a method for computing the probability significance of cost variances. By combining the costs and rewards of investigation with the associated probabilities, a model can be constructed to aid in the decision of when a variance should be investigated.

In the illustrative model, presented in this article, the formal distribution has been used. In some cases, the cost characteristic may make the assumption of normality unrealistic. There is no reason

why the analysis could not be modified to accommodate some other probability distribution and also some other budget philosophy. However, the normal distribution is easy to work with and in most cases it is probably a reasonable approximation, particularly if the budget philosophy is not one of selecting the lowest possible budgeted amount (highest possible efficiency). Given any definite budget philosophy, a reasonable probability distribution could be chosen and the remaining analysis would be much the same as that suggested above. Such analysis should facilitate management by exception as applied to cost control.

THE IMPORTANCE OF IDLE CAPACITY COSTS

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IT IS hardly surprising that the increasing use of scientific models for the analysis of business problems has led to some misunderstandings regarding the proper scope and significance of those analyses. In particular, the distinction between models which have been designed primarily for "pure" research and those intended for the solution of business problems should always be kept in mind. There is no limitation to the factors to be incorporated into a research model since the question of practical applications is not relevant; many models of economic theory illustrate this type.

However, if a model is expected to be of value for the solution of business problems, the factors composing it must reflect real conditions. Unless this is the case, any attempt to draw practical recommendations from the manipulation of those factors can be misleading and even dangerous.

These considerations are particularly important for research in accounting which is supposed to be a valuable tool of management for measurement, information, and communication. It is the responsibility of the accountant to provide management with data which should be helpful for decision making purposes. To disregard this most significant aspect may result in the loss of usefulness for the accountant's work.

A recent paper on the treatment of idle capacity in accounting illustrates the importance of this particular problem.¹ The paper raises a number of significant issues which will be briefly analyzed in this article: any attempt at a more exhaustive discussion would require a special monograph.

The author makes two major points:

1. He asserts there is no concept of idle capacity from an accounting point of view.
2. He recommends an accounting procedure which reflects this position.

The balance of the article will present a discussion of these two statements.

The Concept of Idle Capacity

The possibility of a difference (variance) between available and applied or actual capacity is one of the key problems of modern management. It is a matter of particular concern in this country which historically has tended toward over-capacity which means an excess of available capacity over and above current demand.

The problem may be looked upon from a long-run or a short-run view. In most industries management knows there is no way to avoid idle capacity altogether. But efforts are made continuously to keep it down to the lowest possible level commensurate with other important considerations.

Obviously it costs money (or in more technical accounting terms: costs are accruing constantly) if the facilities of an enterprise are kept in operating condition so it is capable of serving its customers as required. Major attention is usually focused on idle capacity cost in manufacturing and the same will be done here since the author follows the same line. However, it should be noted that idle capacity costs often arise in other parts of the business such as in the selling and administrative as well as the research and development areas, among others.

Management must decide the volume of

¹ William L. Ferrara, "Idle Capacity as a Loss-Fact or Fiction," *THE ACCOUNTING REVIEW*, July 1960.

capacity which it wishes to maintain. It must evaluate the advantages and disadvantages of having more or less capacity available in the light of current and expected demand. In arriving at this decision, the costs involved in maintaining a capacity in excess of present or future demand are of major importance. These are the costs which are the direct result of such a management decision. Their amount will depend to some degree on the desired state of readiness of the facilities. Costs will be higher if management wants to be able to resume production almost immediately; this will include, for example, a substantial amount of direct labor cost which would otherwise be classified as variable. On the other hand, costs can be reduced substantially if a longer time lag is accepted to restore facilities to full operating effectiveness.

This brief discussion should be sufficient to show that management has a vital interest in the amount of idle capacity cost which will always be a determining factor in its decision making. The concept of idle capacity is not merely an engineering problem as asserted by Professor Ferrara, but one of significance to accounting as well. It follows that the accountant is duty bound to keep management constantly informed of current idle capacity costs. His reports should be in sufficient detail to enable management to make decisions on changes in operating capacity which could have an effect on the amount of idle capacity costs.

It appears that a model which disregards or minimizes idle capacity costs is not realistic and, consequently, cannot serve as a guide to the accountant in designing his system and his reports to management. In using such a model, Professor Ferrara has made the mistake referred to before of applying a purely theoretical model for purposes which it cannot fit, namely to provide recommendations for real-life situations.

Converting Fixed Costs into Variable Costs

It is well known that the classification of costs into fixed and variable is relative; the same cost can be classified as either fixed or variable depending on the assumptions made and the circumstances involved. Which classification is appropriate in a particular situation is a matter of fact which, in turn, reflects managerial needs.

From such a point of view, it seems apparent that idle capacity costs are fixed in the sense that they cannot be changed except as a result of a fundamental managerial decision as discussed before.

However, it is possible to take a different position which will lead to a classification of those costs as variable; this is the procedure used by the author of the article in question.

He asserts that it is "entirely inappropriate" to classify such idle capacity costs as depreciation, taxes, and insurance as fixed. He proposes they should be "allocated to production on a unit-of-output amortization plan. This is the most logical procedure to follow if units of plant are thought of as 'bundles of services.'"

Under the proposed method (called "cycle overhead concept") which is an approximation of the unit-of-output amortization plan, the costs mentioned are considered "as capacity costs related to fixed assets. These costs are in effect converted into variable costs by means of the cycle concept which is based on an average of expected sales and the deferred balance sheet treatment of over- and underabsorbed fixed asset costs."

"Idle capacity cannot exist under cycle or expected capacity." In the first case, "unutilized fixed costs are treated as deferred charges"; in the latter "there are no unutilized fixed costs since all fixed costs are allocated to actual output." This seems to mean that actual output has to absorb all the fixed costs whether or not they have been used productively.

"Income measurement should not be based on the physical output potential of facilities . . . but based on the expected or useful life of the facilities." "The grafting of the practical capacity concept onto accounting measurements of income is probably nothing more than the outgrowth of the influence of engineers on early industrial accounting."

These quotations should be sufficient to make clear the author's position which is quite consistent if its assumptions are accepted. It should be noted that his proposal is not new by any means. Many books on cost accounting discuss the "unit of production" method of depreciation which converts depreciation into a variable cost. The principal reason why this method is not much used is the difficulty of predetermining the number of units which will actually be produced during the life of the asset. But in some cases the method is applicable such as for trucks or taxicabs where the number of miles to be covered by the vehicle is known in advance and, thus, it is possible to charge a definite amount of depreciation per mile. Another reason is the widely held opinion that these kinds of costs are time-determined rather than based on production; this is not the place, however, for a more thorough exploration of this interesting issue.

The proposal by no means eliminates the effects of volume fluctuations which result in idle capacity costs (underabsorbed overhead); it merely defers those costs by classifying them as assets. This immediately raises the question as to the significance of this kind of asset. What does it represent? Apparently the costs (losses) were not classified as such at the time they were incurred. Doesn't such a practice contradict the basic accounting principle of matching revenues and costs? The most immediate and important question is as to the procedure of disposing of this so-called asset; when will it be converted into an expense as are other items on the asset side

of the balance sheet? No information is provided regarding this most significant question.

The author probably believes it will eliminate itself, so to speak, as a result of a sequence of over- and under-absorbed overhead charges which will eventually offset one another to the zero point. This leads to another pertinent question, namely, how the "average of expected sales over a period of years" can actually be determined with sufficient accuracy to bring about the desired result of balancing out the over- and underabsorbed overheads.

What the author apparently has in mind is the concept of a business cycle which can be predetermined in such a manner that the under-absorptions of one part of the cycle, the recession period, will be balanced against the over-absorptions of the other, the boom period. In fact, this opinion was widely held in the past and it is probably more than accidental that the two references listed in the article related both to the pre-World War II period when many experts believed in the regularity of business cycle fluctuations.

Today, however, experts are much more cautious and will refuse to venture accurate predictions for a period of years ahead. There are too many changes in general and business conditions and in many other factors to make such predictions feasible or even advisable. Neither the length, frequency, nor particular aspects of business cycle fluctuations can be predicted far in advance.

There is a possibility that it was the concept of a "normal volume" which the author actually had in mind. This concept of "normal" is a complex one and cannot be discussed in the present context. But it should be mentioned that this concept related primarily to costs and pricing rather than to income. There are many advantages of setting a "normal" volume for planning and control purposes as well as a basis for price setting. What this concept

accomplishes, however, is merely to segregate total costs into two parts: The "normal" costs and the "variances" between actual and normal costs. The variances, in turn, can be segregated into a volume variance (cost of idle capacity) and a budget or flexible (controllable) variance.

It is obvious that this technique eliminates the influence of volume variances from product unit costs but it does not and most certainly should not eliminate the effects of idle capacity costs from the determination of enterprise income for the reasons set forth previously. It would be a bad thing to avoid showing these idle capacity costs for the particular period to which they apply. To do so would be tantamount to depriving management of one of its most important measures of operating and managerial efficiency.

Engineering Significance versus Accounting Significance

The author agrees the idle capacity concept may be valuable from an engineering point of view but he denies the same is true from the standpoint of the accountant. This particular approach should be most vigorously opposed. Everything which has an effect on costs must be important to the accountant whose primary responsibility is to determine the most significant income figure.

Experience has shown it is one of the important but often very difficult tasks of the industrial accountant to make operating people aware of the undeniable fact that existing idle capacity involves a constant accumulation of costs. Far too often engineers are led to believe idle capacity "costs nothing" as long as there is no direct cost such as operating labor involved. Professor Ferrara's position would tend to lend support to this erroneous belief and, therefore, could be dangerous to effective management.

Summary

This article raises one of the top problems of present-day accounting; this is the purpose of the accountant's work. The question is whether the accountant will continue to operate within a system of his own design with little attention to the effects of the results attained; this reflects the widely held opinion that the accountant's job is to prepare statements and that it is up to those receiving the statements to interpret them in a manner suitable from their point of view.

The other approach to the accountant's work is to consider it as a vital part of the information system of the enterprise; then it is up to the accountant to integrate his specific system into the broader one and attempt to develop data which should be of greatest value to operating management in its task of making the best possible decisions.

The author of this article apparently shares the first point of view. He pays no attention to managerial requirements but proposes a technique which, although consistent in itself, is bound to confuse rather than to clarify the essential issues. His model is interesting from a purely theoretical point of view in the sense that it emphasizes one particular approach to the problem. It was suggested earlier in this paper that there is nothing wrong with this type of model as long as it is used in the realm of theory only. But to apply it to the solution of practical situations without carefully considering the practical needs of management could be very harmful.

There is an urgent need to reduce the gap between the task of accounting to serve managerial decision making and the somewhat narrow and self-centered attitude of many accounting practitioners who are in danger of losing sight of those really important tasks of the profession.

THE IMPORTANCE OF IDLE CAPACITY COSTS—A REJOINDER

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IN THE preceding article, Professor Weinwurm has criticized my point of view on the non-existence of idle capacity as a loss. I should like to defend my point of view by reiterating certain of my basic premises as well as by showing that the difference between our points of view is a semantic problem which has resulted not in *semantic* confusion but in *real* confusion. This *real* confusion is simply a matter of not specifying and not keeping separate and distinct, at least in our thought processes, the purposes for which accountants may accumulate data.

The central thesis of my original article¹ refers only to idle capacity and income measurement. Professor Weinwurm apparently has not recognized my concentration on the process of income measurement. I do not assert as he claims, "that there is no concept of idle capacity from an accounting point of view." All I assert is that the concept of idle capacity as a loss is inconsistent with the process of income measurement.² One possible exception to this point of view was admitted in the original article, that is, it can be argued that extreme changes in useful life or average sales expectations can bring forth a loss which some might like to describe as a loss due to idle capacity.³

Accounting data are useful for many purposes. However, for each of these purposes we must be constantly on guard against using data which are not relevant to the particular purposes at hand. Professor Weinwurm constantly refers to idle capacity and decision-making. He fails to realize that idle capacity as it relates to decision-making is not the same thing as

idle capacity as it relates to income measurement.

From the income measurement point of view it is the expected use of capacity (useful life) which is relevant. No matter what the physical capability of a machine might be, it has no relevance for income measurement. Machinery or equipment is purchased for its useful life (expected use of capacity) not its physical life (available or physical capacity). Thus it seems quite reasonable to amortize costs related to the acquisition of machinery or any other type of plant facility over expected output during expected useful life. To argue for a physical or available capacity concept is to argue for the thoroughly unacceptable idea that fifty per cent of the depreciation on a salesman's automobile (or factory equipment) is a loss if the automobile (factory equipment) is used and expected to be used four hours during a normal eight hour working day.

From the decision-making point of view, available or physical capacity as well as expected use of capacity could be relevant. Consider the problem of expected increases in sales which must be met with increases in output. Is the added output to come from present capacity, new capacity, or both? A decision of this kind might relate entirely to an analysis of the physical output potential of present facilities and the expected use of the same facilities. On the other hand, if present facilities are physically incapable of producing the added

¹ William L. Ferrara, "Idle Capacity as a Loss—Fact or Fiction," *THE ACCOUNTING REVIEW*, Volume 35, July 1960, pp. 490-6.

² William L. Ferrara, *op. cit.*, p. 490.

³ *Ibid.*, p. 496.

output, a decision must be made as to the advisability of acquiring new facilities. A capital expenditure decision such as this should be based primarily on the costs of acquiring the added capacity and the proceeds related to the expected usefulness of the added capacity.

To object to all possible uses of the concept of idle capacity is certainly not sensible. From the decision-making point of view, as well as from the point of view of production planning, it is often useful to refer to the difference between the physical capability of facilities and the actual use made of facilities. From a socio-economic point of view it is also useful to refer to this "unused capacity," perhaps even to describe it as a loss to our economy, but from the point of view of an individual company it is not sensible for *income measurement purposes* to say a loss is incurred when a financially justifiable decision is made to acquire facilities which are not expected to be used to the full extent to their physical capabilities.

If the concept of idle capacity is to be useful for any purpose it would perhaps be better to refer to idle capacity in one of the following ways:

- 1) How much more output can be produced with existing equipment?
- 2) If present output of facilities could be increased to the physical output potential of facilities, how much would unit costs of production decrease?
- 3) If present output of facilities could be increased to the physical output potential of facilities, how much of our total cost could be transferred from present output to the incremental output?

When idle capacity is referred to as the unutilized portion of fixed manufacturing costs (as it too often is), semantic problems spring forth and it becomes difficult to separate a discussion of idle capacity as it relates to decision-making or socio-economic objectives from a discussion of idle

capacity as it relates to the measurement of income.

One of Professor Weinwurm's criticisms centers around the use and disposition of deferred debits and credits which arise under the cycle capacity concept when it is applied to the fixed costs related to fixed assets. As stated in the original article,⁴ the amortization of fixed costs related to fixed assets should be on the basis of useful life in terms of units of output. The cycle concept based on average sales expectations was cited only as a means of approximating the results of the unit of output method. If expectations concerning useful life or average sales turn out to be correct, all the fixed asset costs will be allocated to units produced and the balances of any deferred debits and deferred credits will be reduced to zero. In the event these estimates are in error, adjustments can be made in amortization rates and in deferred charges or deferred credits. There is no new or objectionable accounting procedure here. An alternate means (cycle capacity) of achieving a desirable end (unit of output amortization) is shown to exist. As accountants, all we have to do is recognize that our "crystal ball" could at times be in error. If the "crystal ball" is in error adjustments can be made in amortization rates and in deferred charges or deferred credits just as they are in the usual theory of accounting for depreciation of fixed assets.

In addition to his other criticisms Professor Weinwurm refers to the practical aspects of measuring expected output during the useful life of facilities. Certainly this is an important consideration if one is to use a unit of output amortization method for fixed asset costs or any other method (a cycle capacity concept based on average sales expectations) which approxi-

⁴ *Ibid.*, p. 495.

mates the unit of output plan. In general all one can do is the best that is possible under each given set of circumstances. In addition, practitioners as well as the academicians of accountancy would do well to remember there is no guarantee that estimates related to straight-line depreciation will be more accurate than estimates of units of output to be produced during the useful life of an asset or estimates related to average sales expectations.

Furthermore, there are many examples of cost studies⁸ which indicate that sales expectations have been estimated and used for purposes of income measurement. The same is true in the area of capital expenditure justification. The newer and more sophisticated approaches to capital expenditure justification require reasonably accurate sales estimates, and we hear too often of the practicality of these sophisticated methods to doubt that reasonable

approaches can be made to quantifying the theory of overhead costs and income measurement advocated here.

In reality one cannot argue with Professor Weinwurm over the importance of idle capacity. Certainly the concept of idle capacity is important, but let us specify which purposes are served by an idle capacity concept and then let us not confuse the concept of idle capacity as it relates to decision-making, production planning, and even socio-economic analyses with the process of income measurement. The concept of idle capacity as a loss is not consistent with the process of income measurement.

⁸ N.A.C.A. Research Study, "Practice in Applying Overhead and Calculating Normal Capacity," *N.A.C.A. Bulletin*, XIX, Sec. 3, April 1, 1938 p. 930. N.A.C.A. Research Study, "Accounting for Excess Labor Cost and Overhead Under Conditions of Increased Production," *N.A.C.A. Bulletin*, XXII, Sec. 3, August 15, 1941, pp. 1565-70. "How Standard Costs are Being Used Currently" (New York: National Association of Cost Accountants, 1950), p. 60.

THE CLASSIFICATION OF CORPORATE STOCK EQUITIES

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WITH the development of the modern corporation, accounting reports have become more difficult to prepare and to interpret. Many of the problems are centered in that portion of the balance sheet identified as the "net worth," "proprietorship," or "capital" section. There are several explanations for the existence of these difficulties. One arises from the complexity of reporting the effect of such transactions as the issuance of shares, the payment of stock dividends, and the reacquisition and reissuance of shares, when ownership is diffused among different classes of stock each having special features. Another arises from the numerous and varied legal restrictions that directly or indirectly influence the reporting of corporate equities. The recent article by Professor Buttmer concerned with the statutory influence on accounting for treasury stock is an illustration of this problem.¹ It may be that accounting theory has not developed to the point necessary to define precisely the functions and objectives to be served by each item of information in the stockholders' equity section of the balance sheet. This is another explanation which may account for the wide variety of terminology used and the varied and often vague objectives attempted to be served.

Though much has been written about financial reporting it is evident that opportunities for improvement in reporting procedures continue. This paper presents a method of classifying the stockholder equity data in the balance sheet in a manner which may be more effective than the methods currently acceptable. The different criteria for classification now in

use are analyzed, followed by evidence that the classification procedure here presented is a workable solution to the problem.

THE CRITERIA FOR CLASSIFICATION

In addition to identifying equity represented and not represented by shares, there are two other useful criteria that serve as a basis for the classification of corporate stock equities. One attempts to earmark resources for various purposes without accounting for the specific assets and operations separately. The other distinguishes between the amount of resources supplied by financing, as opposed to operations.

The first method apparently developed from a legal standpoint, and the conventional terms used for classification purposes are Capital Stock and Surplus. When the state granted limited liability as a feature of the modern corporate organization it established the requirement of legal capital. This provided that some amount of assets equal to the par or stated value of the stock serve as a trust fund or "cushion" for the protection of creditors. From this legal point of view any amount of stockholder's equity over and above the legal capital is "surplus." Both accumulated earnings and amounts paid for shares in excess of their par or stated values represent surplus capital, i.e. in excess of that legally required. Part of this surplus is often appropriated to indicate that assets equivalent to the amount earmarked are to be used for specified purposes, and that

¹ Harry Buttmer, "Statutory Influence on Treasury Stock Accounting," *THE ACCOUNTING REVIEW*, July, 1960, p. 476.

the remainder of the assets are available for dividends to stockholders. This is the traditional and conventional method of classification. It is based partly upon the necessity of meeting legal requirements or equitable restrictions and partly upon the desire to report the intent or prudent judgment of the management regarding the use of the assets.

The opposing basis for classification of stockholders' equities emphasizes that the logical distinction to be made is not between legal capital (capital stock) and amounts in excess of legal capital (surplus), but between funds invested by stockholders and those acquired from retained earnings. It is of utmost importance, according to this criterion, to keep separate the funds committed to the business unit that were acquired from financing and those acquired from operations and the actions of management.

This basis for classification is not a new one by any means. More than twenty years ago Paton and Littleton stated that, "Sound accounting requires the drawing of a clear-cut distinction between capital contributed to the corporation by the stockholders and surplus accumulated by the corporation as a result of profitable administration."² A number of accountants insist this is the only classification necessary for practical reporting purposes. This may be an extreme position, but there are a number of very important reasons for classifying equities by their source.

With the rise of the modern corporation it became necessary for accounting theory and financial reporting to shift from a proprietary concept of the business to an entity concept. Some of the factors responsible for this change include (1) the divorce between management and ownership, (2) the recognition of the business unit as a legal person, and (3) the diffusion of ownership over different classes of stock, each having special features and often re-

stricted rights. Assets under these circumstances cannot be considered as property owned and controlled by proprietors. The prior interests of creditors and certain investors, such as bondholders and preferred stockholders, who are not ultimate owners, must be recognized. Under the entity concept the assets and debts are those of the corporate entity and the entity reports to its constituents who are stockholders, bondholders, employees, and the general public. The entire "right side" of the balance sheet represents merely equities or sources of funds.

The changes thus brought about by the corporate organization have caused accounting and financial reporting to take on a new importance. Absentee ownership, legal regulations, and the increase in size and complexity of business enterprise under the corporate form tend to make accounting reports the means of keeping interested parties informed as to the progress of corporate affairs. Reporting is now aimed at outsiders (security holders of various classes, creditors of various classes, agencies of the government, employees, labor unions), and it literally involves an "accounting" by the business unit for resources entrusted to it by others. If financial reporting is an accounting to the various suppliers of funds for the resources committed to the business unit, then it is imperative that each source of funds be clearly identified on the balance sheet.

Some of the most important judgments a reader can make from balance sheet information depend upon his ability to clearly identify the amount of funds provided from each of the major sources, namely: (1) short-term suppliers, (2) long-term suppliers on a debt basis, (3) investments by stockholders, and (4) retained earnings.

² W. A. Paton and A. C. Littleton, *An Introduction to Corporate Accounting Standards*, p. 106.

Funds from short-term suppliers should, in theory, be restricted to use in expanding the inventories, receivables, and cash balances as necessary when operating levels are above the lowest activity level of the year. These "temporary assets" are financed from sources shown on the balance sheet as current liabilities. Funds invested in permanent assets should of necessity be provided from the three sources of long-term financing. Decisions determining the amount of "permanent" capital to be obtained from each of these sources depend upon such considerations as dividend policy, control, income taxes, stability of earnings, and fixed assets available to be used as security for debt. Unless the sources of funds are disclosed separately there is no way a reader can evaluate the long-range financial commitments that have been made by the management.

With few exceptions it has become the practice to classify stockholders' equity in a manner not entirely consistent with either of these two basic criteria. Expediency is apparently the major reason. The information made available by these balance sheets may be reported in such a way as to unnecessarily mislead the reader or leave him confused.

Evidence of this is not difficult to find. Recently, the members of a seminar class in controllership were given the financial reports of a large corporation and asked to explain the meaning of the accounts and captions in the stockholders' equity section. All the thirty-two members are employed in controllership departments of industrial firms, and by their background and experience were expected to possess an ability to interpret financial statements above that of the average reader. Of this group, twenty-two had the impression that capital stock outstanding represented the total capital invested in the corporation since its inception, and retained earnings represented the total earnings in-

vested in the business. No recognition was given to the effect of stock dividends, treasury stock transactions, or amounts paid for stock in excess of the par or stated value of the shares. The recent use of the term "retained earnings," to replace the term "surplus," apparently contributed to this misconception. The remaining ten members of the class were not quite sure what these captions meant and would not give an explanation.

Many accountants, as well as financial analysts, are seeking a system of reporting which will clarify the stockholders' equity section of the balance sheet. For this purpose, the information made available from using both criteria for classification is desirable and necessary. The question remaining is whether a classification identifying equity represented by shares, earmarking assets, and also maintaining a clear distinction between funds put in the business and those left in the business is workable. A thorough demonstration is needed to indicate that it is both feasible and practical to retain this distinction regardless of the number and complexity of transactions involving owners' equity.

Issuance of several classes of shares at different times, the treatment of premiums and discounts, treasury stock transactions, stock dividends, split-ups, conversions, revaluations, and accounting for donated assets are examples of the complexities which challenge the feasibility of this undertaking. It is the purpose of the remainder of this paper to contribute to this end. A series of typical transactions is used accompanied by a discussion of the accounting procedures involved and illustrations of suggested balance sheet presentation.

ISSUANCE OF SHARES

The XYZ Company is organized with an authorization to issue 1,000 shares of \$100 par value preferred stock and 40,000 shares

of common stock with a stated value of \$10 per share. Subsequently, at different intervals, 600 shares of preferred stock are sold at \$105 per share, 12,000 shares of common stock are sold at prices averaging \$23 per share, and the remaining preferred shares are sold at \$96. Assuming an accumulation of \$108,000 of retained earnings from profitable operations, the stockholders' equity section of the balance sheet may be shown as follows:

(paid-in).

If any of the retained earnings were required to be maintained, as in the case of commercial banks, this amount should also be included as part of legal capital though not in the invested capital section.

REACQUIRING AND REISSUANCE OF TREASURY SHARES

The legal capital may be reduced by the acquisition of shares followed by a formal

STOCKHOLDERS' EQUITY <i>(First Illustration)</i>			
<i>Invested Capital</i>			
Legal Capital:			
Preferred Stock, \$100 par value, 1,000 shares authorized and issued, legal amount.....		\$100,000	
Less deficiency of investment contribution on 400 shares.....	1,600	\$ 98,400	
Common Stock, 40,000 shares authorized, 12,000 shares issued, legal amount \$10 per share.....		120,000	
Total Legal Capital.....		\$218,400	
Paid-In Capital in Excess of Legal Requirements.....		159,000	
Total Invested Capital.....		\$377,400	
<i>Retained Earnings</i>			
Earnings Available for Dividends.....		108,000	
Total Stockholders' Equity.....		\$485,400	

The primary emphasis is upon maintaining a distinction between invested capital and retained earnings. The legal capital is important to many readers and it is shown in a prominent position as a separate sub-classification.

In the illustration the legal capital is obviously 12,000 shares of common stock at the stated value of \$10 per share, plus 1,000 shares of preferred stock at \$100 par value, minus the discount of \$4 per share on 400 shares. This amount (\$218,400) is to serve as the "trust fund" or "cushion" for the benefit of creditors. The remaining funds invested by stockholders (\$159,000) represent the excess of \$13 per share over the stated value on 12,000 common shares, plus a \$5 premium on 600 preferred shares. It may be shown merely as paid-in capital in excess of legal requirements. This has traditionally been considered a surplus

cancellation. Reacquired but uncancelled shares should leave legal capital unchanged. The proper accounting for "treasury" shares is to treat their total cost as an offset to retained earnings until the shares are cancelled. This treatment arises from the statute in most jurisdictions which limits the acquisition of reacquired but uncancelled shares to the amount of retained earnings or the earnings available for dividends. Reacquisition of shares at more or less than book value may affect the remaining stockholders, but there is no advantage or disadvantage to be recorded by the corporation. The problems in distinguishing between invested capital and retained earnings arise when these shares are cancelled or reissued.

To continue the illustration, assume the XYZ Company reacquired 1,000 shares of its common stock at \$30 per share and

cancelled 500 of them. These shares originally sold at \$23 and the book value at acquisition is \$32 per share (\$23 plus \$9 per share of retained earnings). Of the remaining 500 shares of treasury stock, assume 300 were sold at \$33 per share and the other 200 shares were sold at \$28.

Initially, the \$30,000 cost is carried as treasury stock to be deducted from retained earnings. When the 500 shares are formally cancelled the common stock account is reduced by \$5,000 (\$10 per share), the paid in capital in excess of legal requirements account is reduced by \$6,500 (\$13 per share), and retained earnings should be reduced by \$3,500 (\$7 per share).

A good argument can be made for reducing retained earnings by \$4,500 (\$9 per share), since the book value is \$32 per share. This would mean an increase in the paid-in capital in excess of legal requirements of \$1,000 (\$2 per share). This position indicates the retiring stockholder left part of his equity in the business and this could be considered invested capital. The reasoning that \$1,000 should be transferred from retained earnings to invested capital appears fallacious. The retiring stockholder has received back all his original investment plus a major portion of his share of the retained earnings. It has long been established that corporate profits do not become income to stockholders until they

are paid. It is stretching the point rather far to conclude that retained earnings not paid out to a retiring stockholder can be assumed to have been paid and then reinvested in the business with no equity interest received in return.

The latter treatment also would not be consistent with good accounting procedure if the shares had been acquired at less than the acquisition price. In this event consistency would require the difference to be taken out of paid-in capital in excess of legal requirements and added to retained earnings.

The 300 shares of treasury stock sold at \$33 per share should increase the paid-in capital in excess of legal requirements by the difference between the selling price and the acquisition cost (\$33 - \$30 × 300 shares), or by \$900. This is not an increase in retained earnings. On the other hand, the difference between the acquisition cost and the selling price of the 200 shares of treasury stock should reduce the retained earnings by \$400 (\$30 - \$28 × 200 shares). The corporation has distributed \$400 of its assets and this is actually a form of dividend to the retiring stockholder.

The stockholders' equity section of the XYZ Company may now appear as follows after giving effect to the transactions involving the acquisition and disposition of the common shares. To summarize, the

STOCKHOLDERS' EQUITY (Second Illustration)

Invested Capital

Legal Capital:

Preferred Stock, \$100 par value, 1,000 shares authorized and issued, legal amount.....	\$100,000
Less deficiency of investment contribution on 400 shares.....	1,600
	\$ 98,400
Common stock, 40,000 shares authorized, 12,000 shares issued less 500 shares required and cancelled, leaving 11,500 shares, outstanding legal amount \$10 per share.....	115,000
	\$213,400
Total Legal Capital.....	153,400
Paid-In Capital in Excess of Legal Requirements.....	\$366,800

Total Invested Capital.....

Retained Earnings

Earnings Available for Dividends.....	104,100
Total Stockholders' Equity.....	\$470,900

change in the common stock outstanding resulted from the cancellation of 500 shares. The paid-in capital in excess of legal requirements was reduced by \$5,600, the net effect of the \$6,500 deduction when the treasury shares were purchased and the \$900 addition when 300 shares were sold above the purchase price. The \$3,900 reduction in the retained earnings resulted from the \$3,500 charge when the shares were purchased and the \$400 charge when 200 shares were sold below cost.

**STOCK SPLIT-UPS, STOCK DIVIDENDS,
AND CONVERSIONS OF ONE
SECURITY FOR ANOTHER**

Reclassifications of stockholders' equities present different but not insurmountable problems in maintaining the distinction between invested capital and retained earnings, and in showing portions appropriated to indicate that assets equivalent in amount are to be used for various purposes. The simplest type of reclassification occurs when the number of shares of a given class of stock is increased without changing any of the equity amounts. This is commonly called a stock split-up, and it only reduces the per share equity of a given class of stock in relation to the increased number of shares.³ Par-value shares or stated value shares are split by reducing the legal value per share, no-par shares can be split without any action being taken on the value per share. Any increase in the number of shares accompanied by an increase in the total legal value of that class is ordinarily referred to as a stock dividend.

To explain in detail how these two types of equity reclassifications and others may be treated to meet the objectives stated previously, refer again to the XYZ Company. At different intervals of time, assume (1) the company split its common stock on a two for one basis increasing the number of shares outstanding to 23,000

shares, (2) it issued a stock dividend to the common shareholders giving one new common share for each four shares held, and (3) the preferred stock was converted into common stock at the rate of ten shares of common for each share of preferred.

Before the split-up there were 11,500 common shares outstanding (12,000 originally issued, less 500 reacquired and retired). Since the common stock has a stated value of \$10 per share, the two-for-one split would only reduce the stated value to \$5 per share and increase the number of shares outstanding to 23,000. This leaves the total invested capital, legal capital, and retained earnings unchanged.

The effect of the stock dividend on the stockholders' equity is much greater. It increases the number of shares outstanding and increases the total legal capital without decreasing the total equity. This means there must be a transfer from either paid-in capital in excess of legal requirements or from retained earnings. In most circumstances the transfer comes from retained earnings. When this transfer is made to legal capital it becomes necessary to carry common stock of the amount of the stock dividend in the retained earnings section of the stockholders' equity if the classification objectives are to be realized. This procedure discloses the legal capital represented by shares arising from stockholders investment separately from the legal capital represented by shares arising from retained earnings.

Determining the dollar amount to be transferred from retained earnings available for dividends to "cover" the dividend is another problem related to the reporting of stock dividends. The Committee on Accounting Procedure of the American Institute of Certified Public Accountants declared in 1941 that the amount per share of dividend stock transferred should be the

³ American Institute of Certified Public Accountants, *Accounting Research Bulletin No. 43*, pp. 49, 53.

total amount received for shares previously issued, plus any other paid-in surplus applicable to the shares, divided by the number of shares previously issued.⁴

The Institute's Committee modified this treatment in 1953 when it recommended that if the fair market value of the company's shares is in excess of the amount determined by the above-described computation, the amount transferred from retained earnings should approximate the fair market value per share.⁵

A more logical approach than the conclusions of the Institute Committee is that presented by Professor Vatter. The transfer of retained earnings to capital stock, he states, can be justified only by the inadequacy of the legal capital from the viewpoint of the creditors, who are supposed to be protected from loss by the maintenance of the legally stated capital. The amount to be transferred is determined only by consideration of how much the legal capital ought to be increased.⁶

According to the illustration, the stockholders of the XYZ Company receive 5,750 shares of common stock as a stock dividend (one-fourth of 23,000 shares). Assuming that \$16 per share represented the amount agreed upon by which the legal capital should be increased, the transfer would reduce the retained earnings by \$92,000 (5,750 shares at \$16). Capital stock may now be shown in the retained earnings section at a figure of \$28,750 (5,750 shares at \$5 stated value). The remaining \$63,250 will also be presented in the retained earnings section as legal capital in excess of stated value of shares.

The conversion of 1,000 shares of preferred stock into 10,000 shares of common stock is merely an exchange of one set of documents for another without any change in the total corporate stock equities. It cannot increase retained earnings but it will involve a reclassification of invested capital. The effect will be to eliminate the

preferred stock of \$100,000 and the deficiency of the investment contribution of \$1,600 and increase the common stock by \$50,000 (10,000 shares at \$5 stated value), and paid-in capital in excess of legal requirements by the remainder or \$48,400.

DONATED ASSETS AND REVALUATION OF ASSETS

An awkward situation arises in attempting to classify all equity items as invested capital or retained earnings when donations are made to a company. Since gifts to a profit-making enterprise are not considered to be income, they cannot be included in retained earnings. On the other hand, gifts are not investments by stockholders and to mix them with stockholder contributions would combine two dissimilar things. A satisfactory solution is to create a new classification in the stockholders' equity section for equity from other sources.

Similar complications arise when it becomes desirable to express costs of fixed assets in terms of current or recent price levels. Under these circumstances an adjustment is required which ordinarily involves a credit to a revaluation account. This raises the question of whether to carry this account under the invested capital classification or as retained earnings, since the capital arising from revaluation represents neither a contribution from stockholders or reinvested earnings.

The best procedure may be to allocate capital arising from revaluation between stockholders' investment and retained earnings. But any method of allocation would be arbitrary to some extent and serious misinterpretations could result. The portion allocated to retained earnings,

⁴ American Institute of Certified Public Accountants, *Accounting Research Bulletin No. 11*, p. 102.

⁵ American Institute of Certified Public Accountants, *Accounting Research Bulletin No. 43*, p. 51.

⁶ Morton Backer (Editor), *Handbook of Modern Accounting Theory*, p. 392.

for example, may be interpreted as realized income available for dividends. It is better to keep this item intact and classify it as equity from sources other than invested capital or retained earnings.

Assume the XYZ Company made entries to record the following additional transactions: (1) A cash donation of \$15,000 was received, (2) The fixed assets were revalued resulting in a revaluation credit of \$25,000, and (3) \$5,000 of the retained earnings was earmarked for the retirement of the bonded indebtedness. The stockholders' equity section of the balance sheet may now appear as follows,

tween the equity obtained from stockholder investment, from retained earnings, and from other sources.

OTHER EQUITY TRANSACTIONS

Other transactions which must be considered if the feasibility of classifying stockholder equities in the manner described is to be established include those related to reorganizations, recapitalizations, warrants, stock rights, employee stock options, and appropriations of retained earnings. Fortunately, none of these ordinarily present serious obstacles.

A business is practically reincorporated

STOCKHOLDERS' EQUITY

(Third Illustration)

Invested Capital

Legal Capital:

Common Stock, 33,000 shares issued and outstanding, legal amount \$5 per share.....	\$165,000
Paid-In Capital in Excess of Legal Requirements.....	201,800

Total Invested Capital..... \$366,800

Retained Earnings

Earnings Converted into Legal Capital

Common Stock, 5,750 shares issued and outstanding, legal amount \$5 per share.....	\$ 28,750
Legal Capital In Excess of Stated Value of Shares.....	63,250

Total Legal Capital Arising from Earnings..... \$ 92,000

Earnings Appropriated for Retirement of Bonded Indebtedness..... 5,000

Earnings Available for Dividends..... 7,100

Total Retained Earnings..... 104,100

Equity From Other Sources

Capital Arising from Revaluation.....	\$ 25,000
Contributions from Non-stockholders.....	15,000

Total Equity from Other Sources..... 40,000

Total Stockholders' Equity..... \$510,900

after giving effect to these transactions, as well as to the stock split, the stock dividend, and the conversion.

The total invested capital and the total retained earnings, it may be observed, have not been affected by these transactions; the legal capital has been increased and is now divided on the statement. It is the total of the \$165,000 shown in the invested capital section and the \$92,000 in the retained earnings section. A clear distinction is maintained at all times be-

on a new basis and begun again when a reorganization occurs. All the corporate stock equity accounts are often restated under these circumstances. The legal capital may be reduced and any retained earnings should be changed to paid-in capital in excess of legal requirements. Similarly to a new corporation, there should be no balance of retained earnings immediately after the reorganization.

In many cases the reorganization may be of only minor significance and a recapitali-

iation may be a better term for it. Although retained earnings, in this case, need not disappear, there should be no credits therein arising from equity adjustments. In a recapitalization, retained earnings may be reduced but not increased.

There is some question whether the books of the corporation should reflect the issuance of rights to subscribe to additional shares by transferring from retained earnings to capital stock the aggregate market value of the rights when issued. The purpose would be to show the dilution effect in the presentation of retained earnings. Another problem is how to record the cost borne by a corporation when it grants special employee stock option rights. Recording is not justified from the viewpoint of the corporation in either case. Stock purchase arrangements, while diluting individual shareholder equities, do not ordinarily involve a cost to the corporation. They represent a reduction of the per share equity of some stockholders in favor of others within the same class. The only accounting required is to record the exercise of the rights. The entries for warrants, stock rights, and employee stock options need be no different from those required for any ordinary issuance of shares.

An appropriation of retained earnings gives expression to the feeling that resources should be earmarked with respect to plans and activities of management. No attempt is made to account separately for the specified assets or operations. Earmarking of retained earnings for such purposes as expansion and retirement of debt presents no special problem of classification. It represents only a proliferation of items reported as retained earnings.

CONCLUSIONS

Interpretation of the stockholders' equity section of the balance sheet may be

improved if a system of classification is adopted which will convey three basic types of information. First, it must identify equity represented by shares from that not represented by shares. This is taken for granted. Secondly, it must distinguish between legal capital and equity in excess of legal capital, and this excess should also be segregated to further earmark assets for various purposes. Finally, it must distinguish between funds committed to the business unit that were acquired through financing from those acquired through operations and the actions of management.

The transactions presented to demonstrate the feasibility of maintaining such a system of classification are representative of those affecting stockholders' equities. Some innovations in reporting are necessary to give effect to several of these transactions though few changes in accounting procedures are required. One of these arises from using a separate major classification for showing equity from sources other than invested capital and retained earnings. This is necessary since all equity is not always acquired from these two sources.

Another innovation in reporting arises from identifying the legal capital. When a system of classification is based upon two different criteria, one by necessity must become the primary classification and the other secondary. If identification of the source of funds is the most important information to be conveyed to readers, this should become the primary classification. Reporting the legal capital in two or more places under some circumstances then becomes necessary. A thorough recognition and application of the different criteria for classifying stockholders' equities may substantially contribute to improving and clarifying corporate equity reporting.

DIVIDENDS AND THE LAW

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THE problem of capital impairment resulting from dividend distributions has resulted in a repletion of involved regulations designed to limit such distributions. The complexity of such legislation is thus evaluated by Ballantine:

"No parts of the corporate mechanism are more complicated, unworkable or incomprehensible than the system of legal capital requirements with its various attempted restrictions on unsafe distributions of assets to the shareholders."¹

Usually, two requirements are to be met by a corporation about to declare a cash or property dividend. First, the company must be able to distribute the dividend assets without becoming insolvent. Second, there must exist a net worth account, e.g., earned surplus, legally available for dividend charges. Attention will be focused on the latter of these requirements, i.e., the legal "sources" of cash or property dividends, since the matter of insolvency can be treated properly only by considering the problems peculiar to a particular corporation.

Analysis of current statutory provisions relating to dividends reveals certain inconsistencies within the individual statutes in the matter of legal dividend sources. The purpose of this paper is to point out these inconsistencies and to suggest means of their elimination.

Legal Dividend Sources

The primary source of cash or property dividends is earned surplus. It would seem logical to require a corporation to charge earned surplus for dividend declarations before charging any other surplus account. Yet, according to a study by Katz as late as 1941, "no state has enacted the rule that paid-in surplus is available for dividends

only in the absence of an earned surplus."² Although some states have since amended their laws to require the use of earned surplus as a dividend source before paid-in surplus, express provisions of this type do not fully prevail. The S.E.C. has long frowned on the use of any form of capital surplus as a dividend source when a corporation has an earned surplus balance,³ and the Model Business Corporation Act of the American Bar Association has been commended for its inclusion of a provision requiring the prior use of earned surplus.⁴

Corporations usually are permitted to declare cash or property dividends from sources other than earned surplus. The most common of these other sources is paid-in surplus. In addition to the surplus sources, when a deficit exists some corporations may declare cash or property dividends in the amount of current net income. These distributions shall be referred to in this paper as "current earnings dividends." Finally, certain wasting asset corporations, whose net income is derived from the exploitation of such wasting assets, may declare dividends in an amount equal to net income before deducting depletion. The legal principle of permitting depletion dividends is called the "wasting asset doctrine."⁵

A summary of statutory provisions relating to dividends in the various states

¹ Henry Winthrop Ballantine, *Ballantine on Corporations* (Chicago: Callaghan Press, 1946), p. 588.

² Wilber G. Katz, "Accounting Problems in Corporate Distributions," *University of Pennsylvania Law Review*, April 1941, p. 766.

³ Securities and Exchange Commission, *Decisions and Reports*, Vol. 6, 1940, p. 605.

⁴ William P. Hackney, "The Financial Provisions of The Model Business Corporation Act," *Harvard Law Review*, June 1957, p. 1384.

⁵ Donald Kehl, *Corporate Dividends* (New York: Ronald Press Co., 1941), p. 125.

TABLE I
A SUMMARY OF THE PROVISIONS IN STATE LAWS
DEALING WITH LEGAL CASH DIVIDEND
SOURCES¹

State	Current Earnings Allowed	Depletion Dividends Allowed	Charges to Paid-in Surplus Allowed for Cash Dividends on	
			Preferred Shares	Common Shares
Alabama.....	No	Yes	No	No
Alaska.....	No	Yes	Yes	No
Arizona.....	No	No	No	No
Arkansas.....	No	Yes	Yes	Yes
California.....	Yes	Yes	Yes	No ²
Colorado.....	No	Yes	Yes	Yes
Connecticut.....	No	No	Yes	Yes
Delaware.....	Yes	Yes	Yes	Yes
Dist. of Columbia	No	Yes	Yes	No
Florida.....	No	No	Yes	Yes
Georgia.....	Yes	Yes	Yes	Yes
Hawaii (1958).....	No	No	No	No
Idaho.....	No	Yes	Yes	Yes
Illinois.....	No	No	Yes	No
Indiana.....	No	Yes	Yes	Yes
Iowa.....	No	Yes	Yes	Yes
Kansas.....	Yes	Yes	Yes	Yes
Kentucky.....	No	No	Yes	Yes
Louisiana.....	No	Yes	Yes	Yes
Maine.....	No	No	No	No
Maryland.....	No	Yes	Yes	Yes ³
Massachusetts.....	— ⁴	— ⁴	— ⁴	— ⁴
Michigan.....	No	Yes	Yes	No
Minnesota.....	Yes	Yes	Yes	No ³
Mississippi (1958).....	No	No	Yes	Yes
Missouri (1958).....	No	No	Yes	Yes
Montana.....	Yes	Yes	Yes	Yes
Nebraska.....	Yes	Yes	Yes	Yes
Nevada.....	Yes	Yes	Yes	Yes
New Hampshire.....	— ⁴	— ⁴	— ⁴	— ⁴
New Jersey.....	No	No	Yes	Yes
New Mexico.....	No	No	Yes	Yes
New York.....	No	No	Yes	Yes
North Carolina.....	Yes	Yes	Yes	No
North Dakota.....	No	Yes	No	No
Ohio.....	No	Yes	Yes	Yes
Oklahoma.....	Yes ⁵	Yes	Yes	No
Oregon.....	No	Yes	Yes	No
Pennsylvania.....	No	Yes	Yes	No
Rhode Island.....	No	No	Yes	Yes
South Carolina.....	No	No	No	No
South Dakota.....	No	No	No	No
Tennessee.....	No	No	Yes	Yes
Texas.....	No	Yes	No	No
Utah.....	No	No	No	No
Vermont.....	No	No	Yes	Yes
Virginia.....	No	Yes	Yes	Yes
Washington.....	No	Yes	Yes	Yes
West Virginia.....	No	Yes	Yes	Yes
Wisconsin.....	No	No	Yes	No
Wyoming.....	— ⁵	— ⁵	— ⁵	— ⁵

¹ Statutory provisions after 1959 legislative action unless otherwise noted.

² Only when no preferred shares are outstanding.

is presented in Table I. Earned surplus is not considered in this summary because of its general acceptability as a legal source of dividends. The statutes of forty-seven states and the District of Columbia expressly permit dividend distributions to be charged to earned surplus. The law is less specific in the other three states, with insolvency or directors' discretion provisions serving as the only means of statutory limitation on dividend declarations.

Statutes of thirty-nine states establish paid-in surplus as a legal source for distributions to preferred shareholders, and only twenty-eight of these extend the availability of paid-in surplus for dividend charges to common shareholders. In addition to these twenty-eight, the statutes of California and Minnesota permit common dividend charges to paid-in surplus when there are no preferred shares outstanding.

Ten states permit current earnings dividends to be declared on both preferred and common shares. Only Oklahoma provides certain restrictions on current earnings dividends: (1) the amount of the dividend charge may not exceed one-half of the net income, and (2) dividends may be paid on common shares only when no preferred shares are outstanding.

The wasting asset doctrine applies in twenty-eight states and the District of Columbia. In no instance do restrictions exist which limit this dividend source to distributions on preferred shares or to common shares only when no preferred shares are outstanding.

The Current Earnings Dividend Rationale

The reason the California law was

³ Only out of paid-in surplus attributed to common shareholders.

⁴ Dividend declaration "rests in the sound discretion of the directors."

⁵ Insolvency provision only.

⁶ Not to exceed one-half of net income. Payable to common only when no preferred shares are outstanding.

liberalized to permit current earnings dividends has been stated as follows:

"It was the view of the committee that corporations should be able to pay dividends out of current earnings, even though stated capital has become impaired, without the formality of reducing their stated capital. Investors should not be required to forego dividends and income from their investment in order to enable the corporation to make up at once its capital losses if it is making profits from current operations. Prudent management may call for the gradual restoration of capital and a reasonable latitude should be given to the directors as to how rapidly to make up losses of prior years."⁶

It is interesting to note that no mention was made of paid-in surplus in the preceding quotation, only stated capital. A statutory provision which permits current earnings dividends to be distributed to common shareholders is inconsistent with the prohibition against the use of paid-in surplus as a dividend source for this stockholder group.⁷ To illustrate, the following net worth will be assumed for a corporation:

Preferred stock	
\$100 par, 6% non-cumulative, \$100 per share in involuntary liquidation, 500 shares outstanding.....	\$ 50,000
Common stock	
\$100 par, 1,500 shares outstanding.....	150,000
Total stated capital.....	\$200,000
Paid in surplus.....	50,000
Total paid-in capital.....	\$250,000
Less deficit.....	20,000
Total net worth.....	<u>\$230,000</u>

If the corporation whose net worth is shown above has experienced operating losses during its last accounting period and paid-in surplus is not available for common dividend charges, there is no cash or property dividend source available for common shareholders. Subsequent operating losses of \$180,000 would increase the deficit to \$200,000, and the following net worth would result:

Preferred stock—as above.....	\$ 50,000
Common stock—as above.....	150,000
Total stated capital.....	\$200,000
Paid-in surplus.....	50,000
Total paid-in capital.....	\$250,000
Less deficit.....	200,000
Total net worth.....	<u>\$ 50,000</u>

At this point the corporate net worth equals the aggregate liquidation preference of the preferred shares. Statutes commonly provide that dividends may not be declared when a corporation's net worth falls below this minimum level. However, the company in the illustration may pay a dividend to its common shareholders under a current earnings dividend statute if it earns a net income which exceeds the preferred dividend requirement in its next accounting period. A \$10,000 net income would increase net worth to \$60,000 and permit the corporation to distribute a dividend to common shareholders after providing for a 6 per cent dividend on preferred shares in the amount of \$3,000. The company thus is allowed to declare a dividend on common shares when its net worth is \$57,000, while it previously was unable to do so with a net worth of \$230,000 because of the lack of current earnings at that time.

Of the ten states which permit current earnings dividend distributions, four inconsistently place restrictions on charges to paid-in surplus for distributions to common shareholders. Two of these four states, California and Minnesota, designate paid-in surplus as a legal source for common dividends only for corporations with a single-class stock structure. Two other current earnings dividend states, North Carolina and Oklahoma, do not,

⁶ Ballantine, "Questions of Policy in Drafting a Modern Corporation Law," *California Law Review*, July 1931, p. 478.

⁷ George S. Hills, "Model Corporation Act," *Harvard Law Review*, June 1935, p. 1366.

under any circumstances, permit dividends on common shares to be charged to paid-in surplus. Consistency requires either liberalizing the statutes in these four states so paid-in surplus is made available as a dividend source to common share holders (regardless of the stock structure of their corporations) or tightening the dividend limitations by prohibiting current earnings dividends on common shares.

The Wasting Asset Doctrine

In literature dealing with the wasting asset doctrine, that portion of the distribution to shareholders which exceeds the net income has been referred to as a dividend "out of depletion reserves."¹⁸ It is generally recognized that such a distribution is a liquidation of capital and should be reflected as a reduction of paid-in capital on the corporate balance sheet. Since a dividend declaration charged to paid-in surplus also represents a reduction of paid-in capital, it would seem that statutes which permit dividends "out of depletion reserves" also should permit dividends to be charged to paid-in surplus. Of twenty-nine statutes which allow depletion dividends, twelve prohibit, partially or completely, dividend charges to paid-in surplus (see

Table II). Three of these prohibitive statutes do not allow the corporation to charge preferred or common dividends to paid-in surplus, seven restrict the paid-in surplus source to preferred dividends only, and two permit common dividends from this source only when no preferred shares are outstanding.

A statute is inconsistent which prohibits the use of paid-in surplus as a dividend source and permits depletion dividends. To illustrate this inconsistency, let us assume that a corporation could establish either of the following net worth capitalization plans:

	<i>Plan A</i>	<i>Plan B</i>
Preferred stock		
\$100 par, 6% non-cumulative \$100 per share in involuntary liquidation, 500 shares out- standing.....	\$ 50,000	\$ 50,000
Common stock		
No-par, stated value \$5 per share, 1,000 shares outstand- ing.....	5,000	
or		
No-par, without stated value, 1,000 shares outstanding.....		150,000
Total stated capital.....	\$ 55,000	\$200,000
Paid-in surplus from sale of com- mon stock.....	145,000	—
Total net worth.....	<u>\$200,000</u>	<u>\$200,000</u>

For companies not engaged in exploiting wasting assets, Plan B offers more creditor protection than Plan A because of the greater amount of its stated capital. However, the increased creditor protection under Plan B disappears when the corporation involved is engaged in exploiting wasting assets. If, under either Plan A or B, a corporation annually distributes an amount equal to its net income without considering depletion, compliance with the wasting asset doctrine is accomplished. Total net worth will gradually diminish,

¹⁸ William T. Sunley and William J. Carter, *Corporation Accounting* (New York: Ronald Press Co., 1944), p. 192.

TABLE II
PERMISSIBILITY OF CHARGES TO PAID-IN SURPLUS
FOR CASH DIVIDENDS IN THOSE STATES
WHICH ALLOW DEPLETION DIVIDENDS

	<i>Number of States</i>
Paid-in surplus available for preferred and common dividends.....	17
Paid-in surplus available for preferred divi- dends only.....	7
Paid-in surplus available for preferred divi- dends in all cases, but for common dividends only when no preferred shares are outstand- ing.....	2
Paid-in surplus not available for preferred or common dividends.....	3
Total.....	<u>29</u>

the lower statutory limit commonly being set at the aggregate liquidation preference on preferred shares of \$50,000. It is unimportant that under Plan A the consideration received for common shares is represented by two net worth accounts, while under Plan B it is not. The fact that paid-in surplus legally may be charged for dividends has no effect under either plan on the extent to which paid-in capital may be reduced by distributions to shareholders.

The purpose ascribed to stated capital by modern laws is that of a "margin for the protection of creditors against withdrawals by shareholders and for the protection of shareholders *inter se*."⁹ The permissibility of charging paid-in surplus for dividends makes stated capital vulnerable to impairment, as does the wasting asset doctrine. Such permissibility is understandable, since it provides a corporation with the legal means to partial or gradual liquidation. But, as has been shown, it is inconsistent to prohibit paid-in surplus charges for dividends while allowing a corporation to declare depletion dividends. To be consistent, a statute which permits

depletion dividends should also make paid-in surplus available as a legal source for cash or property dividends.

Summary

Liberal legislative policy has resulted in the enactment of provisions in many states which allow corporations to declare dividends from sources other than earned surplus. Distributions to shareholders from these other sources are of three types: (1) current earnings dividends, which are permitted to the extent of all or a portion of current net income when a corporation has a deficit; (2) depletion dividends, which may be distributed to the extent of the increase in net income which results when the depletion charge against revenue is ignored; and (3) dividends charged to paid-in surplus. In those states which allow current earnings and/or depletion dividends, consistency requires that paid-in surplus be made available as a legal source for cash or property dividends since distributions from any of these sources result in an offset to or direct reduction of paid-in capital.

⁹ Hills, *op. cit.*, pp. 1334-1335.

AUSTRIA'S ANSWER TO INFLATIONARY PROFITS AND TAXATION¹

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As the basis for far-reaching decisions on the capital, labor, consumer, and supply market, accounting records influence our economic life to no small degree. These decisions are made, of course, upon the assumption that the data recorded in the accounts are relatively correct. In an economy in which the government exercises due care with its fiscal and economic policy and protects the currency from loss of value, the accounting data can generally be relied upon; however, in times of inflation, as well as in times of deflation, our accounting system fails to show us correct figures. This unreliability is due to the presupposition upon which our accounting system works: namely, that the unit of currency is always equal in value regardless of time.

That this reliance upon historical cost can lead to undesirable results has been demonstrated very well in the Twentieth Century when most of the European countries experienced extreme inflation following World War II. Austria was one of the countries which experienced such an inflationary period. Here, however, sweeping changes were made in the income accounting for tax purposes. These changes had a marked effect upon and were greatly responsible for stabilizing the financial structure which has formed the basis for the greatly improved economy Austria is enjoying today. The Austrian internal revenue service granted important and unprecedented tax privileges to Austrian businessmen during the period of extreme inflation from 1947 to 1954 which went a long way toward helping business to get back on its feet. In 1954, a time when

stabilization had reached the point beyond which only complete price control would eliminate price fluctuations, a complete revaluation of all balance sheet items took place. This article is a study of the tax concessions granted to Austrian businesses during this inflationary period.

*Wholesale Price Index In Austria, 1948-1958²
(March, 1938=100)*

	Overall Wholesale	Industrial Goods Wholesale
December, 1948.....	357	330
December, 1949.....	482	458
December, 1950.....	610	719
December, 1951.....	840	988
December, 1952.....	786	873
December, 1953.....	778	945
December, 1954.....	839	972
December, 1955.....	819	1,035
December, 1956.....	877	1,047
December, 1957.....	862	1,058
November, 1958.....	863	1,014

(From 1938 to 1945 there was no change in the index because of absolute price control.)

Shortly after the Second World War and up to the year 1954, Austrian industry, forced by law to use the cost basis for accounting records,³ found itself confronted with the following problems:

1. the records were unusable for real profit determination;
2. the records did not lend themselves to any proper cost determination;
3. in an application for loans, the balance sheet did not give a true picture of assets;
4. high book profits led to a distortion of the capital account by increasing the earned surplus to amounts many times that of the capital account;

¹ The research for this article, completed in Vienna, Austria, in the summer, 1960, was made possible by a faculty fellowship granted to the author by Butler University.

² Statistisches Handbuch fuer die Republik Oesterreich, Oesterreichischen Statistischen Zentralamt, Wien, 1950-1958.

³ Para. 40 HGB; para. 133 Akt. Ges.; para. 23 Ges. m.b.h.; para. 6 ESTG. 1953; para. 6 KSTG.

5. not being able to determine the real profit made it impossible to calculate correctly amounts that could practically be distributed as dividends;
6. high book profits brought demands of various kinds from stockholders, labor, and consumers;
7. taxes, which by no means were low, in some instances took not only all the profits, but also began to consume capital.

The companies solved some of the above-mentioned problems by introducing a dual accounting system. One system that met all the legal requirements was kept on the cost basis, which was the only basis that could legally serve for published financial statements and for taxes. The other, legally not recognized, was kept on an actual value basis to allow for proper costing and pricing and to serve as a basis for the many financial decisions that had to be made. This attempt at a solution did not, of course, solve one of the main problems—the problem of high taxation of unreal profits which sometimes went beyond the taxation of profits to include even the taxation of capital. This condition, if it had been allowed to continue, would no doubt have eventually resulted in a serious reduction of economic activity. At this point, however, the Austrian government was at last forced to recognize the incorrect cost principle in the established accounting system, and it began to make concessions to eliminate inflationary profits from taxation.

From 1948 until 1954, laws were passed that dealt with three main groups of provisions which helped to eliminate from the taxable income those profits which were due to inflation: 1. measures dealing with depreciation; 2. measures dealing with inventories; 3. provisions that included economic as well as inflationary considerations. New laws were passed each year, some including all three of the above, some dealing with just one or two. Here, it has

seemed easier to treat each of these three main groups of provisions separately and in chronological order.

DEPRECIATION

It is only natural that depreciation should have received immediate attention. Fixed assets, characterized by their longevity, are particularly vulnerable to any inflationary or deflationary economic development if accounting is based upon cost. Depreciation charges during inflation, when based on the old system of historical cost, could not even come close to assuring the tax-free regeneration of the depreciable item. The older the enterprise and the more production facilities available to it the more drastic was the result.

In 1948, the first federal law allowing for tax concessions was passed. Federal Law 132/1948⁴ states in paragraph 1/1/a that an enterprise could, for the purpose of determining its 1947 taxable income for the fiscal year 1946–47, deduct from the profit shown in the books an amount equal to three times the depreciation charged for the year. This additional deduction did not enter the books and was treated for tax purposes like our own long-term-capital-gains deduction of 50%. It was shown only on the tax return. This triple additional deduction for depreciation was allowed only for items purchased prior to January 1, 1946,⁵ and corresponded with the general decrease that had taken place in the purchasing power of the Austrian currency. The purchasing power index of the Austrian schilling rose to 417 by December, 1947, as compared with the base year, 1938.⁶ Items purchased during 1946 and 1947 were omitted from this privilege of additional deduction, since they were available only on the black market and

⁴ *Bundesgesetzblatt*, 132/1948.

⁵ *Ibid.*, 132/1948, para. 1/2.

⁶ *Statistisches Handbuch*, 1950.

therefore black market prices had to be paid and entered into the asset accounts. The normal rate of depreciation was applied and was considered sufficient.

Paragraph 1/1/3 of the above mentioned law seemed unusual at first glance. It permitted an alternative calculation for the determination of the additional amount to be charged off for tax purposes as depreciation. It allowed the taxpayer to multiply the original cost of an item which was still in use by three, and then to apply the normal rate of depreciation to this amount. Under ordinary circumstances, one should arrive at the same result with both methods; however, that different results were intended here becomes clear upon a careful study of the wording: ". . . of the fixed assets still usable at the beginning of 1957 (1946/47) without regard to their book value. . . ." Under this provision, therefore, it was possible to charge off for tax purposes depreciation for items which were fully depreciated but still in use. Going far beyond any accounting concept, this measure introduced economic considerations whereby the government adopted the assumption and expectation that these tax-free means would be used to replace the equipment that had been overworked or partially destroyed during the war.

The provisions listed above were carried over to 1948 (1947-48)⁸ and to 1949 (1948-49).⁹ Since, however, the wholesale index continued to climb, the rate of additional depreciation for items purchased before 1946 was changed from triple to quadruple for the accounting year 1958, (1949-50).¹⁰ Besides this increase, the new law also included items which were either acquired or built during the years 1948 and 1949, however, with additional depreciation limited to one-half the normal rate. This 50% increase, allowed only for tax purposes on newer properties (1948-49),

corresponds very closely to the average change in the overall wholesale price index which took place from 1948 to 1949 and from 1949 to 1950.¹¹

By the year 1951, depreciation accounting for tax purposes became increasingly complicated. All the above-mentioned provisions were continued, and an additional one-quarter tax depreciation deduction for depreciable items purchased or built during the year 1950 was introduced.¹² The index increased from 610 in 1950 to 840 in 1951, an increase of 37.7%. The difference between the recognized 25% and the actual increase of 37.7% is based on the assumption that not all replacements or additions were made at the beginning of the year, but somewhere around the end of the first third of the year.

To summarize all the provisions applicable to depreciation in the year 1951, business was granted, besides the normal book depreciation based on historical cost, the following additional deductions for tax purposes:

1. For items acquired or built before 1946, a quadruple deduction of the normal depreciation could be made; or, at the election of the individual, an amount could be deducted equal to the cost multiplied by four multiplied by the normal rate of depreciation for a particular item, regardless of whether or not the item was already fully depreciated (applicable only to depreciable items still in use).
2. For items acquired or built during 1948 and 1949, a deduction of one half of the normal depreciation could be taken without the election mentioned above (Para. 1/3).
3. For items acquired or built during 1950, a

⁷ *Bundesgesetzblatt*, 132/1948, para. 1/lb: ". . . der am Anfang des Wirtschaftsjahres 1947 (1946/47) noch vorhandenen Wirtschaftsgüter des Anlagevermögens ohne Rücksicht auf ihren Buchwert. . . ."

⁸ Federal Law 132/1949.

⁹ Federal Law 101/1950.

¹⁰ Federal Law 191/1951, Sect. IV.

¹¹ 1948 to 1949, 482:357 = 135%; 1948 to 1950, 610:357 = 171%; 1949 to 1950, 610:482 = 126.5%; unweighted average = 144%.

¹² Federal Law 125/1952, para. 1.

one-quarter additional depreciation was allowed, again without the election mentioned above (Para. 1/4).

These provisions as stated above were carried over, unchanged, to the years 1952,¹³ 1953,¹⁴ 1954,¹⁵ and 1955,¹⁶ provided no revaluation of the assets took place which was allowed in 1954 under Federal Law 190/1954.¹⁷ By 1954, upon the election of the taxpayer and with only a few exceptions, all balance sheet items could be revalued at current replacement cost corrected for normal depreciation charges to the date of revaluation.¹⁸

INVENTORIES

Not only the book value of fixed assets and depreciation charges were affected by the inflation. Inventory items were also affected, and so various measures were passed during the period under discussion to correct for tax purposes the book profits shown as the result of incorrect inventory costing. Book profits for the year 1947, or the fiscal year 1946/47, could be reduced for tax purposes by an amount equal to the cost value of the beginning inventory.¹⁹ By means of this provision, the beginning inventory could be shown twice as cost, once in the regular section of the cost of goods sold, and then again on the tax return to reduce the profit already determined under general accounting principles. Although the index during this period had risen by more than 100 points, this allowance was considered sufficient compensation for inflation, since it was assumed that the inventory would have a turnover exceeding one, which of course would limit the effect of the inflationary trend. The only (and, it would seem, unexplained) limitation to this reduction was that it could not exceed two-thirds of the taxable income determined after deducting the additional depreciation.²⁰ Inventories as defined by this law included raw materials, work in process, finished goods, and supplies.

It was not until the year 1950 that tax concessions were again given for inventory profits. In that year, or the fiscal year 1949-50, the law allowed an additional deduction for tax purposes of 15% of the cost value of all the beginning inventories.²¹ This rate, however, was not a fixed one, as was the other, but a flexible one tied to the turnover of the inventory. If the inventory turnover exceeded two, the rate of 15% had to be reduced by 2.5% of the 15% for each one tenth above the turnover of two. This amounted to a reduction of 0.375% of the additional deduction for every tenth that the turnover exceeded two. With a turnover of six or more, no reduction was possible for tax purposes under this provision. Furthermore, this deduction was limited so:

1. it could not result in a business loss;
2. it could not increase an existing loss;
3. it could not reduce the year's (1949) taxable income below that of the previous year.

When determining the above restrictions, certain other deductions such as that for additional depreciation or for future expansion (discussed in the next section) were to be disregarded.

Most interesting in the 1950 law was, of course, the correlation of inflationary profits with the turnover of the inventory. The overall wholesale index increased from 482 in 1949, to 610 in 1950, or as expressed in per cent, about 26.5%. With a turnover of two, assuming gradual, equal price increases, the beginning inventory probably was sold in the first half of the year when approximately a 15% increase in

¹³ Federal Law 63/1953, Article 1.

¹⁴ Federal Law 98/1954, Article 1.

¹⁵ Federal Law 190/1954, Para. 40/1.

¹⁶ *Loc. cit.*

¹⁷ The matter of the revaluation will be discussed in another article.

¹⁸ *Schillingeröffnungsbilanzgesetz*, Federal Law 190/1954.

¹⁹ Federal Law 132/1948, Para. 2.

²⁰ Federal Law 132/1948, Para. 2/2.

²¹ Federal Law 191/1951, Article 5.

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prices had taken place. Any faster turnover would have correspondingly decreased the inflationary profits because current replacements would have had to be made at increased cost, and thus would have decreased profits. With a turnover of 6 or more, which would mean a complete conversion of the inventory every second month, the inflationary profits were considered negligible from the tax point of view.

As thoroughly as this law appears to have been thought through and connected with an objective index, one important thing was overlooked. The law prescribed the determination of the turnover not on a quantity basis but rather on a value basis. To the cost value of the beginning inventory had to be added all costs of purchases from which sum the final inventory had to be deducted. This amount was then divided by the cost value of the beginning inventory. Since the beginning inventory in a strong inflationary period (assuming an inventory relatively stable in quantity) is always comparatively low, this calculation resulted in the showing of high and unreal inventory turnover. This valuation resulted in unjustified tax relief for companies with low turnovers and relatively stable prices, and it did not bring the expected relief to companies where the turnover was low and price increases were high. That this provision can be rendered entirely useless by this means of determining turnover is demonstrated by the fictional situation below:

Although it is not probable that inflation so drastic as the above would occur, the case shown above nevertheless demonstrates the weakness of this method. The mistake was not in the idea, but in the unwise definition of the turnover.

The tax law for the year 1951²² unfortunately did not change the means of determining turnover; however, it brought another refinement which is of interest. Up to this time all provisions had been based on, or at least could be correlated to some extent with, the overall wholesale price index. Here, for the first time, is evidence of recognition that inflationary price developments can have individual trends with different items, and an attempt is made to incorporate this thought into the tax provision. To eliminate from the book profit those inflationary profits due to inventories, the tax deduction was determined as follows:

1. The average unit beginning inventory cost had to be determined by items or categories. (Beginning inventory of a class divided by beginning quantity.)
2. The average unit ending inventory cost had to be determined also by items or categories.
3. The difference between the average unit beginning inventory cost and the average unit ending inventory cost showed the increase of cost for particular inventory items during the year.

²² Federal Law 125/1952, para. 2.

	<i>Inflationary Industry</i>	<i>Stable Industry</i>
Beginning inventory.....	(100 @ \$ 1.00) \$ 100	(100 @ \$1.00) \$100
Purchases.....	(200 @ \$10.00) 2,000	(200 @ \$1.00) 200
Ending Inventory.....	(100 @ \$10.00) \$2,100 1,100	(100 @ \$1.00) \$300 100
	<hr/> <hr/>	<hr/> <hr/>
Divided by beginning inventory.....	\$1,100 100 11	\$200 100 2
Turnover.....		

4. The price increase as determined in (3) above, had to be multiplied by the number of items in the beginning inventory, of which resulting amount 90% could be taken as an additional tax deduction.

Should the turnover, as determined and discussed in the previous law, exceed three, however, the above-calculated amount had to be decreased by 2.5% for each one-tenth above this stated turnover. This, of course, meant that with a turnover of seven or more, no relief under this provision was possible. Although the deductible amounts had to be determined for each item or category of items, the turnover had to be computed for the inventory as a whole. Otherwise the limitations remained the same as for the year 1950.²³ After 1951, the index remained relatively stable, and no more privileges were granted in connection with inventories except that they could be revalued in the year 1954 under a law discussed in a separate article.²⁴

OTHER PROVISIONS

The provisions discussed in the following paragraphs are of particular interest since their intent went beyond that of inflationary considerations. Besides helping to eliminate false profits from taxation, they were also designed to induce industry, which had been badly damaged during the war, to rebuild its capacity at an accelerated speed at the expense of the then current tax collections by supplying limited untaxed funds. For the accounting year 1948, or the fiscal year 1947-48, a law was passed allowing the tax-free transfer of an amount not to exceed 15% of the taxable income from profits to a restricted surplus reserve.²⁵ This amount could not be more than the actual expenditures for purchases of depreciable production items during 1948. Taxable income for the purpose of determining the 15% limitation

was to be understood as book profits less triple depreciation.²⁶

The purpose of this reserve and the treatment of the depreciable items acquired in 1948, which actually had already been deducted from taxable income within the stated limitation in the year of acquisition, were not mentioned in this law. In order to fully understand this law concerning a restricted surplus reserve, reference should be made to another law passed at the same time, but dealing with the buildup and disposal of such a reserve for the years 1949 and 1950.²⁷ For those years the reserve was increased from 15% to 20% of the taxable income and not limited any more to present purchases but extended to anticipated purchases for the future (expansion reserves). Upon the purchase of depreciable items an amount equal to their cost could be transferred from this special restricted surplus to either capital or free surplus. Depreciation charges of items so purchased were not affected,²⁸ which actually made possible a double deduction, first, when the reserve was established, and second, by regular depreciation charges in the following years. However, the privileges of the additional depreciation as discussed previously did not apply to those items.²⁹ Any amounts left in these restricted surplus accounts (which had to be dated), were subject to taxation after a period of two years. These above-mentioned provisions were carried over with only slight changes to the years

²³ Could not cause a loss; could not increase an existing loss; could not reduce income below that shown in 1949. (para. 2/6)

²⁴ *Schillingeroffnungsbilanzgesetz*, Federal Law 190/1954.

²⁵ Federal Law 132/1949, Article IX/5.

²⁶ Internal Revenue Regulation Z, 60.800.

²⁷ Federal Law 134/1949. (*Investitionsbegünstigungsgesetz*, 1949).

²⁸ Federal Law 101/1950, Article VIII, para. 1/5 & para. 7/2 and Federal Law 134/1949, para. 1/4 & para. 7/1.

²⁹ Internal Revenue Regulation Z, 60.738, (Oct. 6, 1950).

1951 and 1952.³⁰ The year 1953, the third year in which the over-all wholesale index showed a decline, brought an end to the building of this tax-free reserve.³¹

The tax measures concerning depreciation and inventories were directly related only to the price index and to inflation; these last-mentioned provisions were also concerned with the social, economic, and political factors which were the root of these laws. The limitation placed on production facilities and later on housing for employees³² certainly indicates the social and political nature of these provisions; however, the double deduction possibility would also indicate that these measures were designed to some extent to overcome inflationary problems.

CONCLUSIONS

In summary, one must certainly recognize that errors were made during this attempt to relieve the tax pressure due to inflation and it is also true that there were disadvantages involved. Besides the negative points already mentioned, certain fallacies should be noted in connection with the correlation of the provisions to the overall wholesale index. First, the fact that the overall wholesale index was used means that the inflationary development of the individual categories of goods on the market was not taken into consideration. Furthermore, this index was not really a correct measure of the actual inflation even if one accepts the premise that an average measurement would be sufficient for ad-

justment purposes, because it included many items which had legal price ceilings. Another disadvantage was that once the rate of depreciation had been established for particular acquisitions (for tax adjustments) no further adjustments were made, with one exception.

However, in spite of the disadvantages, the Austrian experiment was successful in that the measures gave immediate and substantial tax relief to industry which aided greatly its recovery and therefore helped to stabilize the whole economy. These measures are, of course, far short of a complete answer to the problems which arise for adherence to the cost principle; they are certainly not an absolute remedy. It is the general view of Austrian practitioners themselves, that the provisions passed were far short of what they could or should have been. However, their effectiveness in this situation has proved them to be rather good intermediate solutions to the problem, and it seems as though it might be possible to improve them to the point where they would be generally acceptable as useful, temporary remedies for unrealistic taxation during inflation. Any extended use of measures such as these would, of course, render them impractical; as noted, Austria continued them only during the period of extreme inflation, and eventually all assets were completely revalued at replacement costs.

³⁰ Federal Law 192/1951.

³¹ Federal Law 119/1953, (*Ausfuhrforderungsgesetz*).

³² Federal Law 192/1951.

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THE THEORY OF MANUFACTURING COSTS

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THE proper treatment of manufacturing costs has been a topic of discussion among accountants for many decades. Various treatments recommended range from including only prime costs in inventory to a full costing policy.

In recent years, a new treatment of manufacturing costs has been introduced into accounting literature. The advocates of this new concept, generally referred to as direct costing, and the supporters of the conventional costing concept have been engaged in a lively debate as to the relative merits of these concepts. Such debate is desirable and necessary since every new concept should stand the test of controversy before being accepted or rejected by the accounting profession. Most of the debate thus far has centered around the practical usefulness of the two concepts. It is difficult to find a thorough treatment of the theory of manufacturing costs.

The challenge of direct costing should be met by a careful analysis of both the theory and application of direct costing. If this new concept is theoretically sound and practical of implementation, the accountant must be prepared to consider it as an addition to acceptable accounting. On the other hand, if direct costing is neither theoretically sound nor practical of implementation, the accountant should avoid its use. In between these two extremes lies the possibility that direct costing may not be theoretically sound and therefore cannot be utilized for published financial statements but may be useful for internal application.

The Nature of Direct Costing and Absorption Costing. Conventional accounting practice calls for the use of what is generally termed absorption costing. Absorp-

tion costing is a concept of cost which includes all manufacturing costs as a part of the cost of the product resulting from the manufacturing processes. Although it is questionable whether any one definition of direct costing can be considered as generally accepted, a study of the accounting literature indicates that the basic meaning of the concept is:

Direct costing is basically a costing concept which treats only variable manufacturing costs as a part of product cost. Fixed manufacturing costs are considered to be period costs and unrelated to product cost.

The fundamental difference between direct costing and absorption costing is in the treatment of fixed manufacturing costs; both costing concepts treat the variable manufacturing costs as part of the product cost. Absorption costing charges fixed manufacturing costs to the product while direct costing charges these fixed manufacturing costs to the period in which incurred.

The Conceptual Base of Manufacturing Costs. The literature debating the uses of direct costing and conventional costing indicates that direct costing often provides useful information for the wide range of decisions management must make in day-to-day business operation. Such usefulness is all that is necessary to justify acceptance of direct costing as an internal concept. For direct costing to gain acceptance for external uses it must be theoretically sound. In this paper the conceptual basis of manufacturing costs will be examined.

This discussion will focus on two issues: the nature of fixed and variable manufacturing costs and the relation of direct costing and absorption costing to the basic premise of accounting. First, is there a sig-

nificant difference in the nature of fixed and variable manufacturing costs which justifies treating one type of cost as a period cost and the other as a product cost? Second, to judge the conceptual basis of direct costing, absorption costing, or any other concept of manufacturing cost, the concept must be examined in terms of a basic premise of accounting. To judge any concept without this basic premise would produce only argumentative results. No doubt each individual could reach a logical and supportable conclusion based upon his own premise. A clear and authoritative basic premise is a necessary prerequisite for any discussion of accounting theory.

The basic objective of accounting is to provide information about the properties of the business entity to the many individuals having varying interests in the entity. Each interested party is concerned that his interests have been considered in the accounting procedures. These interests include such parties as stockholders, labor, management, creditors, government, customers, and because of the economic, social, and political aspects of modern-day business, the public in general. To serve all these varied interests, financial statements must not give preference to any one group. Financial statements must fairly reflect the financial position and results of operations to all segments of the business community. The public character and responsibility of business calls for an accounting that is impartial to all business interests. Such a premise becomes the underlying foundation for accounting theory.

The Nature of Fixed and Variable Manufacturing Costs. A discussion of cost variability generally assumes that the costs are totals for some period of time, that is, variable cost is variable in total over a period of time and fixed cost is fixed in total for some period of time. This time factor is important. If there were no time factor,

there would be no such thing as a fixed cost. Over a long enough period of time all costs would be variable. Because of the demands for periodic reports, accounting is tied to periods of time, usually a month or year, and over this time period accountants generally treat certain costs as being fixed while others are thought to be variable.

This statement implies that costs are not inherently fixed or variable but are classified as such by the users of cost data whether those users are accountants, engineers, management, economists, or some other user. Are costs variable or fixed because of an inherent characteristic of the particular cost or is this fixed and variable classification a creation of the user? In an attempt to answer this question, the nature of cost will be examined from three viewpoints: (1) as a beneficial interest in assets, (2) as cash outflows, and (3) as an expense or a loss.

Cost as a Beneficial Interest in Assets. There is growing recognition that assets, other than cash and receivables, are bundles of services which are used by the business in carrying out its economic objectives. The acquisition of an asset by a business reflects the acquisition of a beneficial interest in the service embodiments in an asset. The business in turn makes these services available to its customers. In exchange for these services the business receives from its customers a beneficial interest in another potential service embodiment, usually cash. This exchange of services gives rise to revenue and expense. Revenue is the money measure of the services the business transfers to its customers and expense is the money measure of the services exchanged with the customer in return for the revenue.

Basically, the prime consideration for a business in contemplating the purchase of an asset is the services which the business believes an asset will render and the future contribution these assets can make to the

achievement of the business goals. For example, a plant is not purchased for the sake of owning masonry but for the services it will provide, machinery is purchased for the services the machine will furnish, and so forth. This asset cost should be divided among the units produced by the manufacturing process and which benefit from these asset services. In terms of units benefited, then, all costs are variable costs.

In attempting to provide management with useful cost data, accountants do not classify all costs in terms of benefits because of an inability to determine the number of units benefiting from certain types of asset services. In other words, a fixed-variable cost classification of manufacturing costs evolves from the accountant's inability to measure some costs in terms of benefits. All costs are incurred because of the services expected from the outlay with no differentiation made between fixed and variable. The accountant deviates from measuring these outlays strictly in terms of units benefiting from the use of the asset services because of the "inability to measure." This "inability to measure" has been an important influence on many accounting ideas. For example, the rule that manufacturing costs attach to product, and selling and administrative costs do not, seems to be based on practicality because some selling and administrative costs are as important to the creation of the product as are many of the so-called manufacturing costs. Accountants assume a going concern when in reality the normal business life is somewhere between liquidation and continuity. The inclusion of normal obsolescence but not abnormal obsolescence in the depreciation charge may be due in part to the inability to measure abnormal obsolescence. The realization principle whereby revenue is recognized at the point of realization, although earned by the entire business operation, may at least in part be the result of the inability to

adequately measure revenue as earned.

In a rather fundamental sense, then, the asset purchase price represents the outlay for the services expected from the asset acquired. In the real sense the use of these expected services represents the basis for the charge-off of the asset cost. Both the so-called fixed and variable costs are used to produce revenue. Accountants may choose to spread the asset cost over periods of time, and in fact they often do so, but this does not make real the assumption that fixed costs expire with periods of time. Therefore the fixed cost concept is more an accounting creation than a reality of the situation.

Cost as Cash Outflows. Changing from a benefits viewpoint to a cash outlay view of cost, manufacturing costs can be divided into three categories:

- (1) current cash outflow items such as salaries and other resources which are used as acquired,
- (2) near cash outflows, such as materials and supplies just previously acquired by cash, and
- (3) distant cash outflows for such items as buildings and machinery which provide services beyond the current period.

The second and third categories of cost are not directly related to the outflow of cash but in reality represent outflows of service values consumed to provide revenue. This is as it should be. The current cash disposition as well as both the near cash and distant cash resources represent an outflow of value and to a business there should be and is no supposition that one is a more important use of value than another. In view of this situation it is singular that some authorities have attempted to establish the fiction that the service outflow of assets of a distant cash nature should in no way be considered an element of product cost. It does not seem appropriate to assume that the services of the distant cash costs deteriorate more or less

greatly than those of the near cash costs due to the passage of time. All three categories of cost represent the outflow of service values used to provide revenue.

Cost as an Expense or Loss. An attempt might be made to support the assignment of fixed costs as period costs and acceptance of only variable costs as product costs on the ground that fixed costs represent losses and are therefore proper period charges while the variable costs represent services purposely used to provide revenue. Such recognized fixed costs as supervisory salaries, which represent services purposely used, for example, repudiate such distinction between fixed and variable costs. Only in the sense that service resources deteriorate or expire with the passage of time can any valid distinction be made among service resources on a time basis, and this distinction is not the one used in separating manufacturing costs into fixed and variable elements.

Conclusion: Nature of Fixed and Variable Manufacturing Costs. It may be concluded that the distinction between fixed and variable costs cannot be supported through viewing cost as a beneficial interest in assets, nor can the distinction be between service resources used and those lost or between cash and non-cash resources used. Because supportable distinction does not appear to exist, it must be assumed that the dichotomy of fixed and variable costs does not exist at the theoretical level. In other words, it is submitted that the fixed-variable classification of manufacturing costs is more of a fiction than a reality. The nature of manufacturing costs indicates no significant difference between fixed and variable manufacturing costs which would warrant difference in accounting treatment.

Accounting Theory. Just as "laws" are a must to guide the day-to-day actions of society, accounting principles are necessary for rational accounting. Valid ac-

counting principles must be based on the basic premise that calls for an impartial accounting to all business interests. Before direct costing can be accepted as an addition to accounting, it must adhere to generally accepted accounting theory grounded in this basic premise.

Basic Accounting Assumptions. The business undertaking is generally considered as an entity in its own right and as such is separate and distinct from the owners, creditors, and other parties concerned with the operation of the business; the accounting records and reports are those of the entity. Accounting also assumes that cost recorded in terms of the monetary unit continues to represent actual cost, that is accounting assumes a reasonably stable monetary unit. The individualistic nature of business, the indeterminate lifespan of individual enterprises, and the demand for periodic reports have led to the assumption that the life of the business entity can be divided into time periods. These three assumptions, the business entity, a stable measuring unit, and periodicity, are recognized under both direct costing and absorption costing procedures.

Going Concern. The business undertaking is generally conceived of as having continuity of life, that is, the business entity is assumed to continue operations over a reasonable period of time. This assumption appears to be one of convenience rather than one of fact because no one can accurately predict the course of the future. Continuity is, however, the normal business expectation and the going concern assumption views the business as having a continuity of life with the financial reports serving as views of this stream of continuous activity.

Absorption costing treats manufacturing costs as acquisitions of services held in abeyance until disposition of the manufactured goods. Under absorption costing, manufacturing expenditures in one period

need not be matched with revenue of that period in determining income but should be matched against revenue realized from the sale of the enterprise product. Thus, under a going concern approach, all manufacturing costs are costs of production.

Direct costing views manufacturing expenditures as acquisitions of services with only the variable portion being held in abeyance awaiting disposition of the manufactured product. The fixed portion is assumed to expire in the period of incurrence. From the going concern or long run view, all costs are variable costs and any purchased services remaining at the end of one accounting period should be deferred for matching against future revenue because an accounting period is but one segment in the life of a business. Thus, direct costing is in violation of the going concern assumption in that the benefits received through fixed manufacturing expenditures are not charged to inventory to be recovered by future revenue. Absorption costing adheres to the going concern assumption, while direct costing violates this basic assumption.

Reality. The accounts and reports should give expression, as far as possible, to facts evidenced by completed transactions and supported by objective data. It should not be assumed, however, that accountants are totally uninterested in financial data derived from subjective judgments. There are, on occasion, situations where completely objective facts are unavailable at the time the data must be recorded. In such situations the accountant should strive to record the most factual data available.

The initial recording of the inflowing services acquired by the business entity is the same under both absorption costing and direct costing, that is, the original recorded amount should be bargained price. The point of departure for the two

costing concepts is in the subsequent treatment of these recorded facts. Variable costs are given the same treatment under absorption costing and direct costing in that such costs are charged to the product. The fixed costs are treated as product costs under absorption but are treated as period costs under direct costing.

All manufacturing costs, whether classified as variable or fixed, are incurred with the purpose of contributing towards production and as such the highest degree of reality would be to charge all manufacturing costs to the product. The true economic activity of the business requires recognition of business planning when the assets are purchased. If the services to be used are the determinants in the purchase of the assets, and no other conclusion appears reasonable, allocation of part of this cost on the basis of time certainly is not valid. Actuality would seem to require the treatment of both fixed and variable manufacturing costs as costs of the product, that is, the treatment given manufacturing costs by absorption costing and not direct costing.

Direct Costing and the Basic Accounting Assumptions. Impartiality in accounting requires adherence to the basic accounting assumptions. Direct costing is in violation of the going concern assumption and the treatment of manufacturing costs by absorption costing provides a higher degree of objectivity than does direct costing. In other words, absorption costing is more compatible with the basic accounting assumptions.

Theory of Income. The theory of income is important to the direct costing and absorption costing controversy for two reasons: (1) the determination of income and (2) the determination of the valuation of the balance sheet inventory. *Accounting Terminology Bulletin No. 1, Review and Résumé* defines an asset as: something

represented by a debit balance (other than a deficit) that is or would be properly carried forward upon a closing.¹

Business enterprises are organized with the intent of producing a product or providing a service which will be acceptable to society. Society in return will either accept or reject these business efforts. The success of the business, then, is the success with which the business efforts are accepted by society. The measure of that success is the difference between business efforts and accomplishments or, in accounting phraseology, the difference resulting from the matching of revenues and costs.

From the viewpoint of business, cost represents business effort and revenue is the business accomplishment. The purpose of expending efforts is to generate income or accomplishments in excess of efforts. In normal business operation, the costs are often incurred prior to the appearance of revenue and for the purpose of generating revenue. This gives rise to the presupposition that revenue and costs are related, that revenue is the object of incurring the cost. Business activity is concerned with the outflow of services given and the inflow of services received. It is only a practical expedient that accounting expresses these flows in terms of money-prices and that they are called revenue and cost respectively.

A precise determination of income is possible only upon the termination of a business. However, income is seldom computed for complete ventures. Income determination is by nature, therefore, a time interval idea. Although time periods are a convenience rather than an ideal, the accountant generally must provide the best possible income determination under somewhat less than ideal conditions.

Over the entire life of a business the matching of accomplishments and efforts

would require that all revenues realized by the business be matched against all the costs incurred by the business. Over the entire life of the business, income would be the same under absorption costing as under direct costing. Therefore, the crux of the income determination feature of the direct costing-absorption costing controversy is: does direct costing or absorption costing best measure income for interim periods?

Income determination for an interim period involves many problems, two of the most important being (1) when should revenue be considered realized? and (2) what costs should be matched against this revenue? Prior to the adoption of the accounting period assumption the matching of costs and revenue would have offered no serious problem. The introduction of accounting periods also introduced the problem of matching realized revenue with related costs. As W. A. Paton and A. C. Littleton have written: "The fundamental problem of accounting, therefore, is the division of the stream of costs incurred between the present and the future in the process of measuring periodic income."²

Revenue Realization Principle. Paton and Littleton state: "... revenue is 'earned' during the entire process of operation. . . ."³

If revenue were recognized at the time the services acquired were utilized, all costs of such services could be matched with this revenue and income determined. Under such a procedure, there would be no necessity for assigning manufacturing costs to products and the absorption costing and direct costing controversy would

¹ Committee on Terminology, *Accounting Terminology Bulletin No. 1, Review and Résumé*, New York: The American Institute of Certified Public Accountants, 1953, p. 13.

² W. A. Paton and A. C. Littleton, *An Introduction to Corporate Accounting Standards*, Chicago: American Accounting Association, 1940, p. 67.

³ *Ibid.*, p. 48.

be non-existent. Revenue is, however, not recognized at such time. As to this point of the realization of revenue, Paton and Littleton state: "Revenue is realized, according to the dominant view, when it is evidenced by cash receipts or receivables, or other new liquid assets."⁴

Thus all the business' activities contribute towards the earning of revenue but according to the realization principle this revenue is not realized until a legal sale takes place in the normal course of business operations. This realization principle has virtually achieved the eminence of dogma in accounting.

Both direct costing and absorption costing accept the realization principle. The main disagreement as to income determination centers then on the cost principle and the matching of realized revenue with the costs of earning this revenue.

Cost Principle. A manufacturing business is organized under the assumption that raw materials can be converted into a salable product at a volume of activity sufficient to produce a profit. All manufacturing costs are therefore related to the volume of production and it seems only logical to charge all manufacturing costs, whether classified as fixed or variable by the accountant, as a part of the production cost. Outlays for direct material and direct labor are made for the purpose of creating a product. Plant, equipment, insurance, property tax, and similar expenditures are made in the belief that production will be possible. There is no real difference between expenditures for direct material and machinery. Both represent outlays for resources. There is no real difference between the use of direct material and machinery in the production process. Both represent the use of resources. It is therefore a violation of logic and reason to exclude any manufacturing cost from inventory.

If income determination were reserved

for only completed ventures, all costs would be matched against all revenues. For periodic income determination these costs should be divided into two segments, one portion properly chargeable against revenue and the second portion representing costs applicable to future periods which should be included in inventory. It seems logical that if all costs and all revenues are matched for the determination of completed venture income, portions of these costs, including the so-called fixed manufacturing costs, should be deferred to the proper period through inventory to properly match periodic revenue and cost. In other words, the cost of manufactured inventories represents that portion of the total costs incurred for the services necessary for producing goods. These costs apply to revenue of the future.

There is a definite relationship between manufacturing costs and production. Without the services provided by both the so-called variable and fixed costs there could be no production. The cost of any factor utilized in the production process represents a factor from which a future benefit or contribution can be anticipated and as such should be included as part of inventory. If a manual production process is completely mechanized, is it logical to assume that the cost of the product produced after the mechanization includes no cost of operations while the same product produced before mechanization included the cost of labor? Fixed costs are incurred to make production possible and are as necessary to operations as are the variable costs. All manufacturing costs should be treated as part of product cost with the facts of production serving as the basis for assignment of costs to product.

Direct Costing and the Theory of Income. The social aspects of financial reporting require that accounting be impartial in its

⁴ *Ibid.*, p. 49.

reporting. To internal management, a short run view of income determination may be useful as a guide to the many decisions that must be made on a day-to-day basis. For society, the long run view is dominant. The investor, creditor, and public in general are interested in the business as a going concern with an indefinite life and look upon the income statement as a report of the success of the company in reaching its long run objectives. Shares are sold and credit is granted, for example, on the basis of the prospective income over the long run and not on the basis of the short run. External financial statements must, therefore, treat all manufacturing costs as a part of product cost.

External financial statements must be prepared in accordance with the basic premise of accounting, that is, the published financial statements must report impartially. To report income on a basis different than this basic premise is to do an injustice to some business interests. The published financial statements must hold to absorption costing.

Other Theoretical Considerations. The theoretical discussion above is by no means intended to include all the theoretical aspects of manufacturing costs. On the contrary, I feel that such a discussion would be beyond the scope of this paper and an almost impossible task. However, the theoretical framework discussed above is believed to be essential to a sound fundamental structure of any costing concept whether that concept is direct costing or absorption costing.

Conclusion

Accounting is in a state of constant change; it is in a continual process of refinement and improvement as demands for more useful information are made upon it by the users of accounting data. One of the major users of accounting data is internal

business management. Direct costing may provide management with more useful data for guiding business operations than does absorption costing. However, we must not forget that there are many other users of accounting data outside this internal operating organization: creditors, owners, governmental agencies, labor unions, and so forth. Accounting is extremely flexible in that it can provide information to both internal and external interests. Information provided external users must be based on generally accepted accounting theory. The social aspect of financial reporting requires that accounting be impartial in its reporting; the social good must serve as the basis for theoretical soundness.

Direct costing is not in accord with generally accepted accounting theory and as such is not acceptable for published financial statements. This restricts the use of direct costing to internal uses.

In conclusion, it can be said that the whole direct costing versus absorption costing controversy boils down to the fact that different presentations of costs are needed for different purposes. A concept of replacement cost may be useful in judging the cost of maintaining plant and equipment, differential costs may be helpful for deciding between different alternatives, direct costs may provide valuable cost data for pricing and production planning purposes, absorption costing is necessary for published financial statements, and so forth. Different concepts of cost for different purposes may be hard for some accountants to accept because the inherent nature of the human being seems to urge him to seek the one factor, concept, or whatever which will serve as the answer to a multitude of problems. For published financial statements, absorption costing is a requirement; for other uses direct costing may prove beneficial.

THE ACCOUNTANT'S FUNCTION IN DETERMINATION OF NET INCOME

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ALMOST all accountants might wish to be "good accountants" in the sense proposed by the editor of *Accountants Magazine* in its first issue in January, 1897, possessing

"... familiarity with law without being lawyers; knowledge of commercial practices without being merchants; computational skill without being actuaries; and intelligent interest in monetary and economic questions without being financiers or political economists."¹

Such Victorian generalities might seem elementary indeed in comparison to the professional challenge posed by Paton:

"In a broad sense accounting has one primary function: facilitating the administration of economic activity. This function has two closely related phases: (1) Measuring and arraying economic data; (2) communicating the results of this process to interested parties."²

Although some attention has been given in current accounting thought to the first of the two closely related areas indicated, particularly as to inventory pricing, direct costing, depreciation on replacement costs, and other price level problems, disproportionately more attention has been given to the latter, the ways in which accounting results can be communicated to interested parties. Some worthwhile accomplishments can certainly be observed in financial reporting. Statement presentation is of course related to the measuring of economic data through the tendency of the readers of financial statements to select only a few net figures, such as earnings per share, and book value per share, and then ask no further questions as to the components used in determination of those items.

"The very importance assigned to the net income figure has resulted in what may be described fairly

as inadequate reporting of income data. Perhaps a report that headlines the net income for the year and then proceeds to set out the additional facts of importance may be an answer to what appears to be an undesirable trend in income reporting."

Be that as it may, there seems to be a great deal less interest in definition and determination of income than in statement presentation. It seems, indeed, there is a reluctance on the part of most practitioners (and probably most academic accountants) against trying to develop a body of generalized accounting theory. Certainly much of the incentive for exploration of such things as accelerated depreciation methods and LIFO as an inventory pricing method is not so much because of an interest in the basic problem of income determination as in anticipated income tax liability modification.

Consequently we either concern ourselves with the communication problem or we try to justify in theory what is now current practice, including what individual interests conclude would be personally advantageous to them if accepted as current practice.

If we turn again to a consideration of the primary function cited by Professor Paton in his definition of accounting: to facilitate the administration of economic activity, it will readily be seen that income determination or profitability measurement is not an abstract fine point but rather is essential in justifying budgetary provision for account-

¹ Vol. 1, No. 1, January, 1897.

² William A. Paton, *Essentials of Accounting* (New York: The Macmillan Company, 1949), p. 1.

³ Robert K. Mautz, "Emphasis on Reporting, Net Calculation, Could Settle Income Statement Controversy," *The Journal of Accountancy*, Vol. 96, No. 2, August, 1953, p. 216.

ing expenditures. Although social implications may exist, businesses are formed primarily in response to ownership conviction that profits can be obtained from operation. In order to measure operating results, to gauge the effectiveness of management, and to estimate the vitality of the owners' investment, detailed knowledge of past performance is essential. Subsequent investors and creditors need to know past performance to estimate profit-making potential. Accountants in public practice may well be facilitating the administration of economic activity by making themselves available for "management services." Someone, however, ought to be able to compute profitability for the owners, and to tell them what net return for a given period of time has been enjoyed on their investment. Does it not after all seem reasonable that some breed of accountant should be able to do that?

Inadequacies of which economists complain are generally admitted; to wash our hands piously seems hardly professional, perhaps not even ethical. Percival Brundage quotes Professor Solomon Fabricant:

"Accounting calculations of business income are unacceptable to economists. Current accounting reports yield figures for different companies that are not comparable with one another. Current accounting reports yield figures for a single company's operations in one year that are not comparable with figures for the same company in another year. During a period of inflation, such as we are in, these incomparabilities are serious...."

Economists follow the principle that costs should be related to revenues on the same price level basis and that the income in one period should be compared with the income in another period on the same price-level basis."⁴

We may despair of a solution but this principle is reasonable and it poses a very real accounting problem. All suggested approaches may in our opinion have limitations and thus be frustrating, but it is an accounting problem. It is an accounting

problem because accountants and auditors have sole accessibility to data which will enable more meaningful comparabilities.

An attempt to define income. The 1957 Revision of *Accounting and Reporting Standards for Corporate Financial Statements* defines income in this manner:

"The realized net income of an enterprise measures its effectiveness as an operating unit and is the change in its net assets arising out of (a) the excess or deficiency of revenue compared with related expired cost and (b) other gains or losses to the enterprise from sales, exchanges, or other conversions of assets. Interest charges, income taxes, and true profit-sharing distributions are not determinants of enterprise net income."⁵

Aside from the implication that the change in net assets can be measured by a comparison of revenue with related costs, however, this statement does not really seem to add much beyond the discussion in 1938 by Sanders, Hatfield, and Moore:

1. Income is the increment in wealth arising from the use of capital wealth, and from services rendered.

2. Income in the narrow sense is the owner's share of this increment. This is the income which it is sought to define as 'net income' in the income statement....

Thus it is convenient to think of capital as a store of wealth existing at any one time, and to think of income as the flow of increments in that wealth yielded by the activities of the business.

Additions to the wealth of the business resulting from further investments by the owner, or further contributions by lenders, are increases of capital and not income. Similarly restatements of the money value of the same capital goods, and actual increases in them, are increases in capital in the narrow sense, and are not income.

Income normally arises from the sale of goods or services for amounts greater than their cost."⁶

⁴ Percival Brundage, "Roadblocks in the Path of Accounting," *Harvard Business Review*, Vol. 29, No. 5 (November, 1948), p. 365.

⁵ Published by the American Accounting Association, Columbus, Ohio, 1957 p. 5.

⁶ Thomas Henry Sanders, Henry Rand Hatfield, and Underhill Moore, *A Statement of Accounting Principles* (New York, American Institute of Accountants, 1938), pp. 11-12.

This statement does not seem too much at odds with the viewpoint ordinarily expressed by economists:

"The definition of business income which has gained considerable acceptance among contemporary economists is the one which regards the income of a business for a particular year as being equivalent to the amount that can be distributed to its owners while permitting the business to remain as well off at the end of the year as at the beginning.

Since asset values are presumed to be entirely dependent upon the net future receipts derived from their use, the aggregate value of the enterprise is considered to be equivalent to the present value of a series of estimated future annual incomes derived from its assets and computed at an expected interest rate."⁷

The interesting thing then is that a careful perusal of various attempts at definition do not seem strikingly at odds. What then is the difference between accounting and economic concepts of income?

"In the main the difference between the net income boundary lines drawn by accountants and economists may be said to result from:

1. Differences regarding the functional relationship between physical output and the recognition of gross revenues.
2. Differences as to the relative importance to be assigned to original and replacement costs.
3. Differences in the treatment of capital gains and losses.
4. Differences in point of view as to the proper horizon of expectations which should be reflected in current income figures. If these differences are borne in mind adjustments of any of the main income concepts of economics or accounting to the remaining ones presents no insoluble problem."⁸

These differences in my opinion could well be stated in this manner.

(a) Economists are interested in measuring values, and become upset when accountants ignore price-level changes and refuse to recognize unrealized increment in value. They would have us allow for price-level changes and recognize value increment even though no transaction has

materialized. The accounting terms "Net Worth" or "Equity" suggest value despite the fact the balance sheet obviously does not attempt to measure or express value. George O. May has an excellent suggestion in that regard, based upon the entity theory of corporate equities:

"It is to cast the information usually given in the past in the balance sheet into the form of a statement of the investment in the business and of the property by which the investment is represented. This procedure has two great advantages:

(1) It negatives any suggestion that the statement is one of values. This point may usefully be emphasized by showing on what basis each item is stated.

(2) It stresses the fact that the report is one of stewardship addressed primarily to existing stockholders though available also to creditors, employees, and others."⁹

There is considerable question, however, whether the balance sheet can be very useful as a stewardship report. The reactions of accountants to complaints by economists is typically that our purpose is to report "facts" and that the reader of statements can be expected to interpret them and make value judgements. That this is not possible, however, is too obvious to bear belaboring. Accountants are not able to analyze really intelligently each other's published financial statements, because meaningful supporting data can not be included *in toto* in footnotes. How can someone who is not thoroughly trained in accounting come to reasonable conclusions?

On the other hand, it is also maintained that policy making executives have additional supplementary material beyond that customarily provided in published reports which enables them to function

⁷ Morton Backer, *Handbook of Accounting Theory* (New York: Prentice-Hall, Inc., 1955), p. 216.

⁸ Robert B. Bangs, "The Definition and Measurement of Income," *THE ACCOUNTING REVIEW*, Vol. 15 (September, 1940), p. 371.

⁹ George O. May, "Postulates of Income Accounting," *The Journal of Accountancy*, Vol. 86, No. 1 (August, 1948), p. 111.

intelligently and that such information is not only unnecessary for readers of published statements but might in fact be of a nature which if published would be detrimental to the firm.

(b) A second far more serious difference seems to lie in the accountant's dedication to double-entry bookkeeping. Few of us have any confidence in the accuracy or adequacy of single-entry statements. The reason is only partly because their use is limited to small businesses, often managed in a haphazard fashion.

Accountants

"... seem to have been reluctant to forsake a debit-equals-credit, trial-balance-view of financial statements. The statements must balance; the net income carried through the statement of surplus to the balance sheet must maintain the equality of assets and liabilities. Even the new statement of condition not only maintains but emphasizes this balancing feature by arriving at net assets exactly equal to capital contributed by or derived from the ownership interests.

Why must this be so? Surely such equality does not aid the layman to a better understanding of financial data. Indeed, there is reason to suspect that he mistakes balancing for evidence of infallibility. And there is no particular reason why all asset, liability, and net worth accounts should be forced into a single statement."¹⁰

Moreover, reliance on the obviousness of the trial balance in the statements and their interdependency necessarily required us to assert that income can be found two ways: that it is the change in net assets between two points in time, and that it can also be found by subtracting expired cost from its related applicable revenue for a given period. To be sure, the 1957 Revision of *Accounting and Reporting Standards for Corporate Financial Statements*¹¹ limits assets changes to those arising out of differences between revenue and related cost, but we must assert both if we are going to have "balanced," interdependent statements. The fact that this position becomes less tenable all the time is beclouded under

a series of allegations such as (1) the balance sheet and income statement are not equally important and now the income statement is of greater significance (consequently greater care should be observed that "true" profit is indicated than that balance sheet data be "truthfully" presented), (2) internal reports have to be on a different basis than published reports in order to emphasize data needed for operating decisions because published reports must follow certain conventions which make them less meaningful, or (3) three reports are really needed: the balance sheet, the income statement, and the source and application of funds statement, in order to tell the whole story.

Let us examine the validity of attempting to measure profit through net asset changes. Indeed it is doubtful whether any

"... periodic accounting profit can be defended as absolutely true. As a matter of fact, it can be said that true profit can only be determined by accounting for the net cash change in a business venture over its whole life span.

Thus, if \$10,000 is invested in a new business which operates for 20 years and liquidates at \$8,000, while \$7,000 was withdrawn by the owners during the period of its life, then \$5,000 represents true profit for the 20-year period."¹²

Any attempt to state profit for a portion of that period involves establishment of asset valuations. Present accounting methods call for estimating the relationship of expired time or value to individual useful asset durations in the case of plant and equipment, appraisal value is used in the case of receivables, and inventories may be valued at current costs, at an arbitrary average, or at the prices which happened to be current whenever a LIFO pricing system was established. To pretend there is any synthesized system of using net asset

¹⁰ Robert K. Mautz, "The 'New Look' in Balance Sheets," *The Controller*, Vol. 17, June, 1949, p. 266.

¹¹ *Loc. cit.*

¹² Bion B. Howard and Miller Upton, *Introduction to Business Finance* (New York: McGraw-Hill Book Company, Inc., 1953), p. 93.

changes in determining income is misleading. This is really a holdover from the proprietary theory of equities.

"Under proprietary theory, the proprietor is the center of accounting, and all the accounting concepts and processes relate to the basic notion of the proprietor's interests. The assets are the property of the proprietor, liabilities are the debts of the proprietor; revenue accrues and expenses are incurred through the proprietor's decisions and actions.

Income is the change in net worth arising from transactions which do not represent investment or disinvestment of the proprietor. Accounts for revenue and expense are mere divisions of the proprietor's account. The theory of double-entry is based on the idea that expense and revenue accounts have the same algebraic characteristics as 'net worth', i.e. accounts tending to increase net worth are increased by credits; accounts tending to decrease net worth are handled in reverse fashion. All expense and revenue accounts are closed to the proprietor's account at the end of a fiscal period, to resolve the general ledger into its primary form of the balance sheet equation."¹²

The increasing importance of the corporate form of business organization has in fact rendered this point of view obsolete. Profit as an increase in proprietorship which could be withdrawn at will changed to "income" in which several groups had varying interests. Increased legal regulation, and separation of management from ownership fostered a new concept of reporting on the "stewardship" of management. Since the "investment" of a given shareholder is usually different from his share of the total net worth, accurate book value is both very important and impossible to get.

"Entity theory stems from the legal fiction of the corporate enterprise as a person in its own right. The assets and debts are those of the corporate entity, and the entity reports to its constituents (stockholders, bondholders, employees, and the general public) in much the same way as a trustee reports to his *cestuis*. The corporation 'accounts for' resources entrusted to it through its financial reports, in terms of costs and revenues, financing

transactions and the disposition of earnings. Although the 'equities' of the various parties of interest are maintained, there is no attempt to measure net worth, in the sense of a proprietor's interest. The right side of the balance sheet thus represents accountability (not values, or even precise computations) for legal or equitable interests. The left side of the balance sheet represents assets in terms of costs, not values, because it is cost to which the accountabilities must be related. Income as measured by the matching of revenue with cost-expirations is *corporate* income, and the disposition of income is a corporate affair, subject only to the maintenance of legal and equitable interests of which the common stock is but one. The whole idea of 'net worth' is really abandoned, and the accounting equation is simply the accountability pattern, Assets equals Equities."¹³

The Accountant's Task. In my opinion appropriate steps in the measurement of profitability have not been universally or carefully outlined, and as a result standards for evaluating management's effectiveness are unavailable, investors and creditors are bewildered as they attempt to compare profit-making potential of various firms, and computation of net return enjoyed by owners on their investment is elusive. So long as we insist that income statements, in textbook parlance, must "connect" successive balance sheets, or, in other words, that double-entry must be reflected on the statements as well as on the books, we will be unable to reconcile our income definition with that accepted by economists, which is certainly not without merit. It appears that many controversial elements in determination of net income, such as for example current dollar depreciation, would seem much less controversial if the double-entry approach to financial statement preparation were abandoned. This type of statement revision, of course, is not new, but the reasons usually given do not seem basic enough to require such changes. Perhaps if we realize that the

¹² William J. Vatter, "Corporate Stock Equities" in *Handbook of Modern Accounting Theory* (New York: Prentice-Hall, Inc., 1955), pp. 362-3.

¹³ Ibid., pp. 365-6.

traditional approach complicates "income" determination, double-entry in statements will become a historical relic.

The traditional balance sheet could very well be retired along with the green eye shade. Statements such as those suggested by Caffyn¹⁰ in lieu of the balance sheet would be much more satisfactory:

1. Statement of Net Current Assets
2. Report on Plant and Property showing
 - a. Physical condition of each principal item.
 - b. Adequacy for operation.
 - c. Estimated current value for a going concern.
3. Source and Application of Funds.
4. Statement of Financing.
 - a. Summary of outstanding long term obligations, including leases.
 - b. Summary of capital stock.

If we presented our financial position in this manner, we could go ahead with a clear conscience and compute income

under the entity theory. Revenue is represented by the money or legal claims received for goods or services sold, rather than an increment of net worth. In like manner expense is not an ownership sacrifice or net worth reduction but the cost identifiable with revenue. Current dollar estimates become quite reasonable from this point of view, provided they are based on reasonable index figures. Net income is simply the difference, and "surplus" available for distribution to stockholders is the aggregate current-dollar incomes less aggregate distributions.

Determination of net income is certainly one of the important functions of the accountant; traditionalism in statement preparation leads us to shy away from meeting that problem head on. If accountants won't do it, who else can?

¹⁰ H. R. Caffyn, "A Plague on Pacioli," *The Journal of Accountancy*, Vol. 86, No. 2 (August, 1948), pp. 150-1.

ACCOUNTING FOR DECISIONS

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SUCCESSFUL decisions are the hope of every manager. Snap decisions indicate a disregard for scientific thinking and a reliance upon intuition and chance, or an unusual mental ability to simulate the problem, determine the strategic factors, and evaluate the alternatives. To be successful, decision-making ordinarily requires:

1. A clear and timely perception of a problem, its limits and components.
2. The selection, collection, and interpretation of the relevant factors.
3. A method of integrating the *strategic factors* to facilitate evaluation of the alternatives, and to formalize the decision process for future reference, analysis, and improvement.

There are several questions in regard to the decision process which should be of vital concern to those who are interested in maximizing the potential of the accounting profession. What is the relationship of the present accounting to the decision process? What are the requirements of accounting for decisions? How do these activities correlate with established accounting?

Present Accounting and the Decision Process

Recent literature has emphasized that accounting provides one of the oldest and most integrated models of a business. At present, conventional accounting provides various static descriptive models of the business, reflecting transactions of the past. Accounting also provides static predictive models; for example, the standard cost model which attempts to predict what costs should be in the future.

Historically, accounting has developed as the result of a specific need. First, the balance sheet model was presented to

satisfy a need for financial information. Secondly, the profit-and-loss model was developed to satisfy the need for explaining the change in net worth between two balance sheets. More recently, the source and application of funds model was provided to present a more detailed explanation regarding the changes in the other balance sheet variables. Cost accounting models have been created to satisfy the need for inventory valuation and product costing. Budgetary models have been visualized as tools to be used in the control process. Standard cost models resulted from a desire to compare actual costs with some predetermined standard for evaluation purposes.

Accounting has employed the technique of model building to satisfy specific needs. *A model is a tool used to summarize the effects and relationships of relevant factors of a specific problem.* In this sense a model may be a method of analysis, or more commonly, a system of measuring the relevant factors of a business decision and summarizing the results of varying these relevant factors, or variables.

A model may simply be represented by a mathematical formula, such as $A - L = NW$. In this case, the relevant factors are assets, liabilities, and net worth. The summarization of the relevant factors, A and L, is represented by Net Worth. The results of varying A or L, or A and L, are measured by the model $A - L = NW$. Likewise, the formula, Beginning Inventory plus Purchases less Ending Inventory equals Cost of Goods Sold, is a model system of measuring the relevant factors (Beginning Inventory, Purchases, Ending Inventory), and summarizing these factors

in terms of the resultant, Cost of Goods Sold.

Each ledger account is a model, or method, of measuring all transactions (the relevant factors) of a business which are relevant to the respective ledger account *as it is specifically defined and by a method recognized as generally accepted* by the accounting profession. To identify a specific ledger account as meaningful, the account must be defined in terms of the relevant business transactions which the model (ledger) will summarize, as well as the specific method or methods by which these relevant transactions will be measured. Finally, the specific ledger account must be defined as a relevant factor in the total accounting system, including its relationship to all other relevant factors of the system. Thus the accounting system itself, as we identify it, consists of a model summarizing the relationships of a large number of smaller models *presumably for some specific purpose*.

It would appear extremely urgent to define clearly this purpose for several obvious reasons. First, in the event that the purpose is not clearly defined in considerable detail, it is impossible to recognize clearly the relevant factors and to build a useful model. Secondly, if the purpose is not currently identified and frequently reviewed, recognition of changes in the relevant factors or the appearance of new relevant factors unfortunately might not be identified. Thirdly, if the purpose is not specifically identified, the model may commonly be used for purposes for which it was not intended and, therefore, may be subject to considerable criticism on the basis of its not satisfying the need for which it was used. Finally, and possibly most important, without a current, timely, and specific definition of its purpose, or identification of what it is not intended to be used for, considerable confusion and disagreement may develop within the

profession itself in regard to the preferable method, relevant factors, etc. The latter is more inclined to occur if it is generally assumed that one major model must be designed to encompass all, or nearly all, purposes. Such an approach would tend to develop advocates for different versions of the model which would emphasize different methods and relevant factors, depending upon the specific purpose which would be assigned the greatest weight of importance by the current writer or professional group. This may account for the difference in professional opinions in regard to the importance of price level adjustments, direct costing, etc.

If journal articles on topics such as direct costing were consistently presented in terms of specific models as aids for specific decisions, an appreciable improvement in communications might be realized. In fact, we might very well discover that there is really little or no disagreement on many current topics which at present appear to be quite controversial.

In any case, the accounting models were developed to satisfy a need of the decision process. They were not developed as aids to all decisions, but for a very limited number of specific decisions for specific groups or for specific levels of management. For example, the conventional profit-and-loss model may aid the internal revenue agent in the decision as to whether or not the proper income tax has been paid.

The present conventional profit-and-loss model may aid management in decisions which involve as relevant factors trends of past profits, costs, etc., of a specific company and under circumstances where the basic characteristics (such as product mix, levels of production, production methods, sales methods, fixed and variable cost relationships, etc.), all remain somewhat constant, but the same model should not be used to decide whether a specific company's management is efficient or ineffi-

cient, or to compare the profitability of two companies. There does appear to be a definite relationship between present accounting and the decision process. Unfortunately, the limited number of present accounting models is not clearly defined nor, by any means, widely understood as to their proper and improper usage. In many cases it would appear that even accountants have forgotten the purposes of their models.

Maximizing the Potential of the Profession

Each experienced accountant must accept or reject his specific opportunity to assist in the decision process on the basis of his ability to contribute to the specific decision. The task of the accountant and of the accounting profession itself need not be restricted to traditional, historical models. The future professional standing and growth of the accountant will depend upon his opportunity and willingness to accept responsibility, and his ability to render service. *The future progress and potential of the accounting profession will depend upon each member's willingness to: (1) analyze logically and critically present accounting; (2) investigate thoroughly past purposes and objectives in terms of present needs and potentials; (3) define aggressively the purposes and limitations of present and future models in terms of their specific uses and relationship to the decision process; (4) search for and analyze thoroughly alternative methods, techniques, and tools which are presently employed in other professions; (5) recognize clearly the possibility of future developments in data processing directly affecting his present activities, purposes, and realms of responsibility; (6) recognize that responsibilities which he has not as yet accepted, or is not willing to accept, have been and will continue to be eagerly assigned to and accepted by other professional groups.*

The experienced accountant can apply

traditional use of data, techniques, types of analysis, and the model building approach to the operations analysis type of problem. In many cases, he may at present be more adequately prepared to assist in the decision process than members of any other professional group. On the other hand, if he is not willing to increase continually his breadth of knowledge and to accept additional responsibility, such opportunities may be lost forever.

Accounting for Decisions

There is little chance that any single model can incorporate all factors relevant to all possible alternatives and become useful for all decisions. A general-purpose model will cloud the issue by incorporating irrelevant factors in regard to a specific decision. *Accounting for decisions must therefore emphasize model building for specific decisions.* The problem must be defined and the decision made by line management or the persons with the respective authority. Accounting for decisions encompasses requirements "2" and "3" of the decision process described above: the selection, collection, and interpretation of the quantitative relevant factors; and the method of integrating the strategic quantitative factors. The method of integrating the strategic factors involves building a model.

There may be some advantages to identifying accounting in the framework of model building, or accounting for decisions, such as:

1. The identification of specific decisions for which present accounting models may be useful.
2. The orientation of all accounting principles, methods, and techniques in terms of specific decisions, rather than for general all-inclusive purposes.
3. The more scientific emphasis upon definition of the problem and the determination of relevant and strategic factors in

terms of specific decisions.

4. The continuing emphasis upon re-evaluation of methods of measuring identified relevant factors.

5. The facilitation of increased communication within and without the profession.

6. An environment which would tend to identify more clearly the purposes, functions, and potential of the profession.

7. An environment which would tend to encourage original thought, initiative, investigation, research, a desire to know why rather than just how, as well as training for the future, rather than the past.

Accounting for decisions implies building a model for each specific quantifiable decision. Therefore, priority of need, as well as cost and value, must be limiting factors directing the accountant's efforts. Furthermore, a *clearly defined program must be selected* by the accountant in order to direct his efforts efficiently and within the scope of his special abilities and delegated responsibilities.

A program in this sense is a clearly defined method of approaching or analyzing a problem. A program is essential to provide a scientific environment and to avoid common pitfalls of the beginner. A program must be a logical plan to devise methods of collecting and organizing facts into useful answers to specific questions. A useful program requires a careful plan involving the following steps:

1. Clearly stating the problem in terms of reality.
2. Determining the relevant factors.
3. Selecting the strategic factors.
4. Building the decision model.

Statement of the Problem

Careful attention should be directed toward obtaining a *statement of the problem by the manager in terms of his required decision and objectives.* The accountant must thoroughly understand the practical

limits of the decision as well as the possible alternatives. The how, when, why, where, and what of decisions to be made and objectives to be realized are all-important elements in defining the problem.

The real problem and the governing objectives are not usually obvious. First the problem is defined, an objective chosen, and the relevant factors analyzed. The results of the preliminary study are then used to improve the definition of the problem. The problem then can be redefined to direct more attention to the relevant factors that appear important.

Determining the Relevant Factors

A careful statement of objectives, although vital to defining the problem, is seldom directly useful in making the decision. Scientific decision processes rely on explicit statements of all relevant factors and their relationships. The goal is to select those relevant factors and relationships employed for making decisions which will lead to the desired objective. For example, given three events, A, B, and C, examination may show that A causes B, that B causes C, that C causes A and B, but not that something else, D, causes both A and B, or that C has only a chance relationship. It may be easy to show that some factors or relationships have no bearing on the matter: excess costs and decreasing profits of Company X do not cause bad debt losses for Company X. But it may be far more difficult to discover which of the other possible relationships is both valid and useful to indicate actual events.

Selecting Strategic Factors

The accountant should obtain from the manager his opinion of the relative importance of each factor. The factors should be screened to select the most influential quantitative factors. A multiple correlation analysis programmed on a computer can be a very useful tool for this purpose.

Recognition should be given to the degree of precision required for the decision, and to the practical aspects of the cost and value relationship. The value added by an implement of greater precision may not justify the additional cost required to obtain the increased precision. A major difference of opinion may exist as to the strategic factors. In such cases, several groupings of strategic factors may be desirable, and, therefore, several alternative models and solutions may be presented for consideration.

In most cases it is possible and desirable to simplify the problem by selecting only the most important factors, the strategic factors, for a tentative solution. In the event that the tentative solution appears useful and feasible, consideration can be given to the need for and feasibility of a more refined selection of strategic factors, tools, and a precise model or models.

Huge costs and expenditures of time may result from inadequate consideration and selection of decision criteria. The lack of available information and the final design of the model will normally require a compromise in the selection of realistic strategic factors.

Building the Decision Model

The following steps are necessary to build the model:

1. *Gather all available information relative to each of the strategic factors.* The practical limitations mentioned above should be clearly recognized. Each of the factors should be precisely defined in terms of their identities and relationships to other factors, as well as to the problem itself. The factors should also be defined in terms of their data availability and reliability. Each factor should be assigned a weighting identifying its importance in relation to the other factors.

2. *Determine other information pertinent to the problem.* At this point, subsidiary

problems should be recognized and the relationship of these factors established. Any assumptions necessary should be boldly identified. Various analytical methods should be explored for possible application to the immediate problem and to subsidiary problems. Mathematical tools, such as algebra and calculus, or deductive logic, statistical inference, probability theory, multiple correlation analysis, sampling techniques, and linear programming, to mention a few, should be considered for possible applications to the specific problem. As both the level of understanding the environment, and the availability of scientific techniques for decision making continue to grow, a much wider range of problems will become amenable to direct solution. At present, the accountant may have to expand his techniques of measurement and request assistance of other specialists to maintain his usefulness in the future.

3. *Select the decision model.* The model must represent a method of showing the relationships of the strategic factors as discovered in steps one and two above. The model must encompass the most appropriate method of measurement. The model must be directed toward a solution to the problem, or a series of solutions to the alternative decisions available. Again, consideration should be given to present accounting models, mathematical models, and operations research models which have been employed for other purposes. In some cases, it may be discovered that some alterations may make a presently existing model useful for the specific decision under consideration. A knowledge of present models and their uses therefore facilitates the selection of a decision model for a specific decision.

4. *Reexamine all the original factors.* Effort must be made to determine if other factors, in addition to the strategic factors, might alter the solution. For example,

factors which were not quantifiable and therefore not included in the model should again be recognized along with the results of the model in finalizing the decision. Other factors not included in the model should be reexamined to estimate further the direction in which they might alter the model and therefore the decision.

5. *Test the model against experience, attempting to improve its validity and determine its usefulness.* Consideration should be given to other possible applications of the model than the specific decision for which it was designed. Thus some validity test may be possible on known decision areas before the specific decision is made. The model may be tested under simulated conditions, or conditions of the past, to appraise its potential usefulness.

The decision making process should be reexamined as time passes to test whether the model produces the desired results. Appraisal of results is a continuing task requiring examination for possible changes in the problem, variables, relevant factors, relationships, etc. In appraising the decision model, at least four questions should be asked:

- a. Does the model provide the desired answers?
- b. Does the model predict accurately the relevant aspects as seen by experience?
- c. Is the value of the model's usefulness greater than its cost?
- d. What can be done to improve the model?

Conclusions

Conventional accounting has employed a model building technique for each of its recognized statements. Each model has been built to satisfy a specific need. Needs result from required decisions. There is a direct relationship between accounting, the decision process, and accounting for decisions.

Accounting for decisions simply emphasizes developing models for specific decisions. A standard program for accounting

for decisions should be utilized. To make a contribution to the decision-making process, the accountant must take the following steps:

1. He must recognize that the generally accepted accounting models have limitations, involve basic assumptions, and were designed for specific purposes. He must be able to take a new look, recognizing different objectives, without the harness of conventional accounting.

2. He must broaden his background, at least to the extent that he becomes familiar with some of the major tools in operational research, such as:

- a) The model
- b) Probability and statistics
- c) Queuing theory
- d) The Monte Carlo method
- e) Simulation
- f) Theory of games
- g) Linear programming
- h) Dynamic programming

3. He must be imaginative, creative, ambitious, optimistic, willing to experiment and interpret aggressively the results.

Some of the pitfalls that he is apt to fall into should be mentioned:

1. Lack of a clear recognition of the problem, in terms of the objective of the decision maker and the alternative courses of action.

2. Inability to sacrifice absolute precision for simplicity.

3. Inability to recognize that qualification in terms of rough approximation is better than no statement of relationships or evaluation.

4. Reluctance to predict aggressively, evaluate, and recommend on the basis of his models. Presentation of the model is not enough. Action in the form of interpretation, evaluation and recommendations must be the final result to reap the benefits.

In each case as a specific need is made known, the accountant must accept or reject the responsibility of accounting for

decisions. The accountant must begin now to prepare for his usefulness in the future, or be willing to accept the risk of less professional prestige in the future.

* * *

An Illustrative Application of Accounting for Decisions

The following case problem has been selected to demonstrate more clearly the concept of accounting for decisions, the application of the suggested program, and to emphasize the following two points:

1. Operations analysis techniques are equally applicable to small business decisions and do not necessarily require tremendous expenditures of time or money.
2. The scope of managerial accounting should be restricted only by the accountant's ability to render service to management.

Step 1—Statement of the Problem

To determine the optimum relationships between:

- a) Inventory on consignment at retail outlets
- b) Retailer's sales per month
- c) Number of calls made by wholesaler on retailer per month to replenish inventory, to maximize profits of wholesaler.

The problem originated from a wholesale battery distributor for which the author has ample operating statistics. The solution will therefore be applied in terms of a wholesale battery distributor, thus providing realism and the ability to check results. The problem stated in terms of the wholesaler was: "How many times per month should I call on the retail outlets to replenish stock on consignment?" The problem is not as simple as it may at first appear.

Step 2—Determining Relevant Factors

The relevant factors appear to be as follows:

- A) Sales of retailer
- B) Inventory on consignment:
 - (1) Inventory mix
 - (2) Number of batteries
 - (3) Minimum inventory for reasonable selection
 - (4) Maximum inventory retailers are willing to accept on consignment.
- C) Cost of making a routine call
- D) Cost of making a special call
- E) Cost of incremental inventories
- F) Probability of losing a sale due to unreplenished inventory
- G) Custom of the trade
- H) Public relations

Step 3—Selecting the Strategic Factors

At this point it may be possible to simplify the problem by selecting the strategic factors for a tentative solution. Consideration will then be given to the other factors at a later point in the analysis. It will be assumed that the strategic factors are A, B, and F above.

Factor A, sales by retailer, can be easily determined from the perpetual inventory on consignment card system of the wholesaler. There is an inventory card for each retailer showing inventory on consignment and sales by month and type. Likewise, Factor B can be determined from the inventory cards. Also the inventory cards indicate the number of calls made on each retailer.

Unfortunately, this information pertains to what actually happened in practice rather than what should have happened. In other words, it tells us what the relationships between the strategic factors were, rather than what they should have been to maximize profits. It is static historical information which does not tell us how much more profit the wholesaler might have made (or lost) by varying the amount of inventory on consignment per retailer or by varying the number of calls per retailer. It appears we have run into one of the major criticisms of conventional account-

CHART I
DISTRIBUTION OF BATTERIES BY INVENTORY MIXES
BATTERY STYLES

Inventory Mix #1	K	L	M	N	O	P	Q	A	Total # of Batteries	Cost per Month
#1	1	1	2	2	2	1	1		10	1.00
#2	1	1	3	3	3	1	1		13	1.30
#3	2	2	3	3	3	2	2		17	1.70
#4	2	2	4	4	4	2	2		20	2.00
#5	3	3	4	4	4	3	3		24	2.40
<hr/>										
Approximate % of Past Sales by Style	5%	5%	25%	30%	25%	5%	5%			

ing. It is therefore necessary for us to devise a specialized model which will act as a tool in the solution to our problem.

Step 4—Building the Decision Model

Step 4-a. Gather all available information relative to each of the strategic factors. The following information is available from the records of the wholesale battery distributor:

1. The present inventories consist of seven styles which we shall call K, L, M, N, O, P, Q.
2. The distribution of actual sales by styles over the past two years was as follows:

K	5% of Sales
L	5
M	25
N	30
O	25
P	5
Q	5

It is important that we recognize the degree of accuracy required in the solution and be willing to accept simplifications wherever possible. The practical aspects of effort and benefits should be emphasized. To simplify the problem, we shall divide this distribution into two groups as follows:

Group A—NMO 80%
 Group B—KLPQ 20%

3. There have been approximately 100 re-

tailers. The retailers may be classified by sales volumes, ranging from one to seven sales per month.

4. The pattern of sales by styles for individual retailers appears to approximate the overall average stated in (2) above.
5. The average total cost per call has been approximately 60¢. The marginal cost per call within the range of operations would be approximately the same, since one additional call per retailer would result in one less possible call on a potential retailer.
6. The average inventory cost including computed interest, insurance, taxes, etc. is approximately \$.10 per battery per month.
7. In general, retailers do not wish to have more than 24 batteries on consignment.
8. The wholesaler uses the same inventory-mix for all retailers (Mix #1 below).
9. The wholesaler's gross margin per battery is \$3.00.

Step 4-b. Determine other information pertinent to the problem.

1. What are the possible alternative inventory-mixes? All reasonable alternatives should be considered. To simplify the problem for demonstration purposes we shall select five alternative mixes. See Chart I.
2. What is the chance of losing a sale for each possible inventory-mix with various combinations of sales by the retailer and calls by the wholesaler? A probability table for each

CHART II

PROBABILITY OF LOSS OF SALE TABLE FOR INVENTORY MIX #1

NUMBER OF SALES PER MONTH

Number of Calls Per Month	1	2	3	4	5	6	7
	1	0	4%	62%	—	—	—
2	0	0	4%	4%	62%	—	—
3	0	0	0	0	0	4%	62%
4	0	0	0	0	0	0	4%
5	0	0	0	0	0	0	0

CHART III

PROBABILITY OF LOSS OF SALE TABLE FOR INVENTORY MIX #2

NUMBER OF SALES PER MONTH

Number of Calls Per Month	1	2	3	4	5	6	7
	1	0	0	10%	30%	—	—
2	0	0	0	0	10%	30%	—
3	0	0	0	0	0	0	10%
4	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0

inventory mix is presented in Charts II-VI.

The probability tables were determined as follows:

Probability formula:

Pr of x

$$= B^{n-x} \left[\frac{(n)(n-1)(n-2) \cdots (n-x+1)}{x!} \right] A^x$$

n =total number of sales (1) (2) (3)
... X

x =number of sales of A

A =% of total sales represented by product Group A (Including style MNO)

B =% total sales represented by product Group B (Including KLPQ)

$x!$ =the factorial of x

Pr of x =probability of x sales of A

Example: The calculation of the probability of loss of a sale with Inventory Mix #1 and one call per month on a retailer whose sales are 3 batteries per month. The various

combinations of Group A and B with three sales are as follows:

- a) 2A plus 1B—would result in no loss.
- b) 3A plus 0B—would result in loss of sale.
- c) 1A plus 2B—would result in loss of sale.
- d) 0A plus 3B—would result in loss of sale.

Probability of 2A plus 1B:

$$.384 = 2^1 \times .38 \times \left[\frac{3 \times 2}{2 \times 1} \right]$$

Probability of other alternatives:

$$100 - .384 = 61.6\%$$

3. What probability of loss should the wholesaler be willing to accept? The wholesaler has the following alternatives in the marginal calls:

- a) Make an additional call per month at a cost of \$.60.

* Neter and Wasserman, *Fundamental Statistics for Business and Economics* (Allyn and Bacon, Inc., 1957), page 246.

- b) Shift to the next larger inventory-mix at a cost of \$.30 to \$.40 per month.
 c) Accept the probability of a loss of a sale providing the probability of the loss is no greater than alternative A or B.

Since the gross margin per battery is \$3.00, a 10% probability of the loss on the tables would indicate an estimated average loss of \$.30. The wholesaler should therefore be willing to accept something less than a 10% probability of loss.

Step 4-c. Select a model type which will

show the relationships of the strategic factors and arrive at a solution to the problem. A model which will satisfy the requirements of the problem takes the form of a matrix, since this is a simple method of showing the relationships involved. The model is referred to as an input-output model by the economist, even though it is used for an entirely different purpose and in a different way.

For each of the alternative inputs (inventory-mixes) the model indicates the

CHART IV
PROBABILITY OF LOSS OF SALE TABLE FOR INVENTORY MIX #3
NUMBER OF SALES PER MONTH

	1	2	3	4	5	6	7
1	0	0	.8%	2%	42%	—	—
2	0	0	0	0	.8%	.8%	2%
3	0	0	0	0	0	.8%	2%
4	0	0	0	0	0	0	0%
5	0	0	0	0	0	0	0

CHART V
PROBABILITY OF LOSS OF SALE TABLE FOR INVENTORY MIX #4
NUMBER OF SALES PER MONTH

	1	2	3	4	5	6
1	0	0	.8%	2%	25%	—
2	0	0	0	0	.8%	.8%
3	0	0	0	0	.0%	.8%
4	0	0	0	0	0	0

CHART VI
PROBABILITY OF LOSS OF SALE TABLE FOR INVENTORY MIX #5
NUMBER OF SALES PER MONTH

	1	2	3	4	5	6	7
1	0	0	0	.2%	.7%	36%	—
2	0	0	0	0	0	.2%	.7%
3	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0

CHART VII

INPUT-OUTPUT MODEL

SHOWING NUMBER OF CALLS TO BE MADE PER MONTH WITH VARIOUS INVENTORY MIXES AND SALES
RETAIL OUTLETS BATTERY SALES PER MONTH

	1	2	3	4	5	6	7
Inventory Mix #1	① ¹	① ²	2	2	3	3	4
Inventory Mix #2	1	1	① ¹	2	2	3	3
Inventory Mix #3	1	1	1	① ¹	② ¹	② ³	② ⁴
Inventory Mix #4	1	1	1	1	2	2	2
Inventory Mix #5	1	1	1	1	1	2	2

Assumptions:

- a) Sales distributed throughout month.
- b) A willingness to take a 10% chance at losing a sale.
- c) Optimum combination.

Actually, the optimum solution results in the following probabilities:

1. 0 probability of loss of sales.
2. 4% probability of loss of sales.
3. 1% probability of loss of sales.
4. 2% probability of loss of sales.

number of calls required for a retailer with a particular output (retailer's sales). The model also shows the optimum relationship between the input, output, and number of calls. The latter is the specific solution to the problem set forth. The model is presented in Chart VII.

Step 4-d. Re-examine the original factors to see if those, in addition to the strategic factors, alter the solution. Possibly for public relations reasons, or because it is the custom of the trade, it will be determined that calls should be made more frequently and, therefore, other than the optimum combination should be employed.

Step 4-e. Test the model against experience, attempting to improve its validity and determine its usefulness. The model type and method of analysis is probably not

limited to inventory on consignment problems. It should be applicable to many types of problems requiring inventory replenishment, for example, in regard to the designing of cigarette vending machines, battery display racks, as well as determining optimum inventory investments and sales relationships, estimating desirable total inventory investment, etc.

Conclusions

Model VII, which is a combination of models II, III, IV, V and VI, indicates the following solution to the problem:

1. If retailer's sales are one or two batteries per month use inventory mix #1 and make one call per month.
2. If retailer's sales are three batteries per

- month use inventory mix #2 and make one call per month.
3. If retailer's sales are four batteries per month use inventory mix #3 and make one call per month.
 4. If retailer's sales are five, six, or seven batteries per month use inventory mix #3 and make two calls per month.

Actually, 75% of his retailers sell four to seven batteries per month. Therefore, to avoid the problem of estimating the future

number of sales for each retailer, or the problem of shifting inventory mixes as sales change by one or two batteries per month, inventory mix #3 can be selected as a practical solution to the problem.

The wholesaler had used inventory mix #1 for all retailers for the past three years. The shift to inventory mix #3 resulted in an approximate increase in profits of \$70.00 per month.

A NOTE ON DEPRECIATION AND INVENTORY VALUATION METHODS USED BY FOOD COMPANIES

ALLEN B. RICHARDS

General Mills, Inc.

FINANCIAL statements cannot be critically examined unless companies disclose the methods used in obtaining the figures in the statements. In a recent attempt to review and analyze statements of food companies, it became apparent that the disclosure policies of the 217 companies examined were something less than desirable. In particular, most of the companies did not report depreciation methods and about one-half of them reported only a very nebulous "Lower of Cost or Market" inventory valuation method.

Tables 1 and 2 show the number of food companies, by type of industry, reporting various methods of depreciation and inventory valuation in 1958. The classifications listed at the top of the columns were those actually found in Moody's Manuals. No attempt was made to consolidate, for example, the four classes of "Lower of Cost or Market" (the first four columns of Table 2). The methods referred to were those given in Moody's. In addition, the annual reports of a sample of these companies were examined. In every case the methods were either reported as briefly as in Moody's or were not reported at all. In many cases, the annual reports provided less information on these methods than Moody's.

Table 1 shows that 83 per cent of the companies examined did not report the method of depreciation. However, according to the Internal Revenue Service Report,¹ most of these companies used the straight line method in 1957-58. The Internal Revenue Service also indicated a

definite trend away from straight line depreciation by corporations of all types. In 1954-55, 89 per cent of all corporations used straight line depreciation; by 1957-58, only 70 per cent were using that method. As the Internal Revenue Service states, these figures are not strictly comparable, but they do indicate a trend to accelerated types of depreciation.

Table 2 indicates that the food companies did better in reporting inventory valuation methods. About half of these companies reported "Lower of Cost or Market." If we include all "Lower of Cost or Market" categories, 76 per cent of the companies were using some form of the method. Yet, even here, they leave a reader not really satisfied that he knows precisely what method or methods they are using.

Financial statements are supposed to supply stockholders, investors, governmental agencies, and other interested parties with sufficient information to provide a good foundation for making decisions about the performance of individual companies. Unless the methods and policies underlying the reported figures are disclosed so there is no question as to the meaning of the figures, the data may be of limited value. If financial statements are to be used for something more than advertising and fulfillment of legal obligations, then policies that are every bit as important as the data should be adequately disclosed. This survey of food companies

¹ Internal Revenue Service, *Statistics of Income, 1957-58, Corporate Income Tax Returns*, U. S. Treasury Publication No. 16, April, 1960, p. 115.

indicates that in two critical areas they have not reported their methods as adequately as needed for detailed analysis of their performance.

TABLE 1
DEPRECIATION METHODS USED BY VARIOUS FOOD COMPANIES¹

Industry	Straight Line	Straight Line Until 1953-54. Sum of Digits: 1954-58	Amor-tized Over Useful Life	Com-posite Rate	Sum of the Digits	Straight Line Declin-ing Balance after 1953	Declin-ing Balance	Not Given	Total
Number of Companies									
Beverages.....	3						1	22	25
Biscuits.....	1	1			1			6	9
Bread, Cake, etc.....	1	1						18	21
Cereal and Grain.....	3							16	19
Confectionery.....	1	3		2		1		22	26
Corn Refining.....							1	2	5
Dairy Products.....	3						1	16	20
Fishery Products.....								12	12
Meat Packing.....	1				2	1		13	17
Miscellaneous Products.....	1	2						35	38
Vegetables and Fruit.....	2	1						15	18
Vegetable Oils.....		1	1			1		4	7
Total.....	16	9	3	2	2	2	2	181	217

¹ Source: Moody's Industrials, 1959.

TABLE 2
INVENTORY VALUATION METHODS USED BY VARIOUS FOOD COMPANIES¹

Industry	Lower of Cost or Market	Lower of Cost (Fifo) or Market	Lower of Cost (Lifo) or Market	Lower of Average Cost or Market	Average Cost	Lifo	Replace-ment Cost	Market with Adjustment	Not Given	Total
Number of Companies										
Beverages.....	11	3		4	3				4	25
Biscuits.....	3	3		1					2	9
Bread, Cake, etc.....	9	5		2					3	21
Cereal and Grain.....	5	3		1				9	1	19
Confectionery.....	17	4	1	2		1			1	26
Corn Refining.....	5									5
Dairy Products.....	15	2	2		1					20
Fishery Products.....	7	4							1	12
Meat Packing.....	8	2					5	1	1	17
Miscellaneous Prod-ucts.....	18	7		3	4	2		1	3	38
Vegetables and Fruit.....	10	1		1		3			3	18
Vegetable Oils.....		4		2		1				7
Total.....	108	38	3	16	8	12	1	12	19	217

¹ Source: Moody's Industrials, 1959.

THE TEACHERS' CLINIC

GLEN G. YANKEE

EDITOR'S NOTE: This section of THE ACCOUNTING REVIEW is devoted to matters of particular interest to accounting instructors. The contribution of articles bearing on the nature and purpose of various types of accounting education, or dealing with techniques of accounting instruction, is invited. Address all correspondence to Glen G. Yankee, School of Business Administration, Miami University, Oxford, Ohio.

DEVELOPMENTS IN ACCOUNTING INSTRUCTION*

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Almost all universities with accounting major programs are engaged in a sweeping overhaul of their curricula. The subject matter of each course is being carefully studied to determine how well it fulfills the objectives of the course. The objectives themselves are under close scrutiny. With all this attention to the course objectives and content it is perhaps a particularly appropriate time to have a look at new developments in methods of teaching accounting. Significant developments are taking place in both methods of teaching and supplemental aids available for the use of the student. Some of the more important areas warrant our consideration.

Business Games

Business games, at their best, are simulations of business conditions which require a sequence of decisions from the players. Results of these decisions are fed back to the players through periodic financial and other reports, and new decisions are then required. Only incomplete information is available and decisions must be based upon anticipation of the probable result of both their own team action and that of competing teams.

There are two major types:

1. Executive games are simulations of business situations requiring top-level management decisions. The majority of these require EDP equipment. These are rather widely used in universities in connection with busi-

ness policy courses. Some of the more complicated executive games for top executive use are quite expensive to operate.

2. Specialized business decision games which are restricted problems concerned with fundamental areas of business management such as production, scheduling, inventory control, machinery maintenance and repair, etc. The purpose of playing this type of game is to give practice in balancing a limited number of factors (unit purchase cost, storage cost, interest, etc.) applying to a particular business situation. The more simple of this type may be played manually; the more complex require the use of EDP.

Business games have been designed for various business subjects—marketing, finance, management, business economics, etc. Most games combine more than one business topic. All, of course, make substantial use of accounting systems, statements and other data, but to date none have been found which are primarily designed for the teaching of accounting.

Accounting has long been the vehicle for introducing business terminology and general business knowledge as well as accounting fundamentals. Game playing, with its fortunate characteristic of generating tremendous enthusiasm for learning and utilizing basic management tools, is a natural for the first accounting course. No other teaching method promises anywhere

* The material in this paper grew out of the work of the 1960 Committee on Teaching Methods of the American Accounting Association.

near equal power to motivate students to self study and evaluation. Both types of business games can be adapted to the teaching of accounting. A general (somewhat simplified executive type) game could well be used to provide the motivation desired for the beginning accounting area. The specialized game should prove useful to drive home technical aspects of accounting in more advanced accounting courses.

It is in the area of the first accounting course for beginning business students that the first efforts should be made to design business games for use in accounting teaching. To date no university making such use of business games is known; however, the University of Oregon has plans for such a game in connection with a university-wide honors program. Special emphasis should be directed towards utilizing the business game, either to teach or as a supplement to other teaching methods in the beginning accounting course.

Television Instruction

Television accounting instruction is now well established in many universities throughout the United States and is undoubtedly here to stay. It has some disadvantages but many more advantages when considering the tremendous demand that increasing student enrollment will place upon experienced accounting teachers.

Methods of making use of television in the teaching program vary somewhat. Michigan State, for instance, has a weekly live lecture for up to 350 students for an introductory explanation of the week's material, with the following three recitation meetings conducted in closed circuit television. At Penn State two different patterns are followed. Certain of its professors prefer two single hours on TV with a separate two hour laboratory session handled by graduate assistants; others

have three single hours on TV followed by a fourth hour with the class separated into small laboratory sections. At the University of Houston, which has three lecture hours and three laboratory hours, students have been given free choice of attending TV or live classroom lectures. This year Houston will experiment with two hours per week of TV, one hour classroom lecture, and two hours of laboratory. Arizona State has experimented with commercial channel TV courses with credit granted if students register and pass three on-campus examinations.

Most of these universities make use of "talk-back" systems and all report the importance of the extensive use of good visual aid materials. The programs have been in effect from two to five years and all schools in the study report the results of extensive tests of the effectiveness of their programs. Results of common examinations administered to controlled groups, classes taught both by TV and conventional methods, indicate that students taught by means of TV learn accounting about the same or just slightly better than those in live classes. There appears to have been, however, a pronounced increase in the number of failures where TV was used in teaching the elementary accounting course. Television instruction costs have been found to be higher per student for groups under 200 to 250. For larger groups the cost per student declines rapidly. At Penn State, TV instruction for classes of 700 to 800 were found to cut per student cost approximately in half.

Attitude survey results may be summarized:

1. Student reaction varied from $\frac{1}{2}$ in favor of TV to $\frac{1}{2}$ preferring TV. All schools found that students voted more favorably for TV after having had a course using this medium.
2. Faculty reaction to TV instruction (except for TV teachers who appear very favorably disposed) appears to be somewhat less than

enthusiastic. A survey at Penn State after five years experience disclosed that a majority were slightly against or undecided, and from $\frac{1}{2}$ to $\frac{1}{3}$ for TV instruction. Tests over successive years appear to indicate a slowly growing acceptance on the part of teachers.

The University of Houston is at present under a Ford Foundation grant preparing a video tape for use in teaching elementary accounting. Video tape was demonstrated by the showing of a 45 minute elementary accounting lecture at the AAA Convention at Ohio State. The tapes when completed will be available for use in other schools.

The development and increasing use of video tape teaching in accounting and other fields has implications that may have a profound effect upon present and future teachers of accounting. The problems of control of the film being in hands other than the professor's, how such films will be retired when obsolete, the question of proper reimbursement, and many others are of great interest to the members of the teaching profession. Some study should be made of these problems while the use of tape instruction is still in its beginning stages.

Teaching Machines and Programmed Text Books

A recent teaching development, the robot or teaching machine, is in use to drill, test, and teach students in many subjects from Russian to psychology. The device varies from an electronic computer through various types of machines to a non-machine programmed textbook. The typical machine presents the students with questions "programmed" in a sequence designed to present the material in small easily understood progressive steps with enough repetition to assure retention. The student answers the questions by pressing buttons. Correct responses produce a green light or a prompt verbal "well done." Incorrect answers cause a red light to flash

and must be corrected before the machine produces the next question. Test scores are computed and incorrectly answered questions stored to be presented to the student at certain intervals.

These machines are in use in many universities including Harvard (human behavior), Northwestern University (psychology), Earlham College (Russian), University of Pennsylvania (psychology), New York Institute of Technology (electronics, physics, mathematics), Hamilton College (which has a \$204,000 Ford Foundation developmental grant), Oberlin College, University of California at Los Angeles, University of Illinois, Oregon State, and Ohio State. Mr. Atd (Automatic Teaching Device), which has been developed at the New York Institute of Technology, actually talks; an automatic device for drilling in multiplication is manufactured in Devon, Pennsylvania, for elementary schools. The Auto Tutor made in Santa Barbara, California, is used at an Air Force base for teaching electronics and by the Prudential Insurance Company to train insurance salesmen. Teletest, a robot made in Garden Grove, California, makes use of closed circuit television and trains medical students in surgery. Hughes Aircraft Company trains assembly workers by means of Video-Sonics, another type of machine.

Elementary accounting is being adapted to a programmed text book by the Iter Corporation of Waltham, Mass., based upon Noble and Niswonger's text. Questions designed to be progressively more difficult are printed on long sheets of paper placed in a cardboard frame. The student fills in one or two word answers and moves the paper up. The correct answer appears to the right of the question. The authors of this "programmed" accounting text book wish to determine objectively its effectiveness by performance of controlled groups. One group of first year accounting students

would use the programmed text as a supplementary study aid. Their performance can be tested by comparing test scores with other groups not using the programmed text. Such a test is in progress at Harvard University.

The programmed text would appear to offer two major advantages for application to accounting teaching. First, it would relieve the teacher of tedious repetitive chores, such as drilling the students in detailed accounting procedures. Second, this device assists learning and permits the student to set his own pace.

Motion Pictures and Color Slides

The motion picture films of the AICPA introducing public accounting as a career have pointed out a somewhat neglected accounting teaching possibility. Sound motion pictures of actual classroom discus-

sions and lectures would be an excellent means of bringing leading accounting authorities to local classrooms. Think also of the advantage of having the thoughts of great teachers in accounting preserved for posterity by such means.

Motion pictures and color slides also present an excellent means of motivation for accounting study. For instance, showing pictures of steel making or other manufacturing processes would be a great help in arousing interest in the study of accounting. A student who can visualize the story which accounting data tell of the men, materials, and processes of the business enterprise will be motivated to study accounting and other business subjects. Industry has many of these visualizations prepared for its own training programs and is generous in permitting their use when asked.

A TWO-WEEK CPA COACHING COURSE

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When the merits of offering a CPA Coaching Course in two weeks were first considered, it was feared the short time allotted would not produce substantial results. Contrary to expectations, however, the course has been much more successful than originally thought possible, and it is now planned to offer the program for the fifth consecutive year.

After the grades of the November 1960 exams were obtained, the progress of our "alumni" who had completed the course during the first four summers was measured. Sixty-three per cent had already passed all parts of the examination while twenty per cent were well within sight of their goal. Based upon these early figures it appears that at least seventy-five per cent of those taking the course will successfully

complete the examination requirements within a reasonably short time. Incidentally, the majority of the participants do not have a degree in accounting although most of them have had two or more years of practical experience.

Administration of the Program

One distinct advantage of the program from an administrative standpoint is that it can be offered during the summer session with only two qualified instructors. It has even been feasible to use an instructor who is concurrently handling a summer teaching load. This is possible because the students spend considerable time working problems independently. During these periods the instructor can leave in order to handle his regular lectures. The writer has

done this on several occasions and has found that it did not detract from either the coaching course or his regular classes.

Since no college credit is given for the course, it is not necessary to consider prerequisites or other university requirements. The amount of formal accounting training a student has had does not seem to be related to the amount of progress that can be expected of him. On the average, of course, the person with more training does fare better; but a number of students who have had no accounting beyond the correspondence course level have made creditable progress. It has, therefore, not been found wise to exclude anyone simply on the basis of educational background.

The size of the groups has varied from fifteen to twenty, and one instructor has been able to handle the class at any one time. The two instructors handling the course are thus able to teach on alternate days and to use their free time for reviewing the following day's assignments. If there were more than twenty in a class, it would probably be desirable to engage an assistant to help with the lab sessions.

While a few of the participants have their own public accounting practice, most of them come from the staffs of CPA firms in the state or surrounding areas. In many cases the CPA firm is willing to absorb the entire expense of the course including tuition, board, and lodging. In fact, the Montana Society is so determined to support the program as a means of increasing the number of CPAs in the state that it has agreed to underwrite any losses. So far the course has suffered a loss in only one year.

Operation of the Program

As soon as students are registered, preliminary assignments are forwarded to them. These assignments consist of problems chosen from the various areas of an intermediate, an advanced, and a cost

accounting text. Students are asked to submit solutions to these problems at the opening session. No attempt is made to grade or review them but printed solutions are available and students are encouraged to compare their work with these solutions. The main purpose of the preliminary assignments is to force students to begin the task of actually solving problems and to conduct some sort of orderly review before attending the course. No preliminary assignments were used in the initial year and improvement in performance in subsequent years convinced us that such preparatory work is essential.

As has been indicated, the sessions are highly intensive. They start at 8 A.M. each day and run until 9 P.M. in the evening for twelve days. Other than time out for meals and two short coffee breaks, they are in continuous session. Before each major topic, an hour or more is spent in lecturing on the important aspects of the subject. Students are then put to work solving problems or answering theory questions. If a problem is particularly complex, the instructor will try to get everyone started on the right track by outlining an approach on the board. Considerable stress is placed on the desirability of writing the answers to essay type questions as completely as possible; telegraphic answers that merely outline the major points are not accepted. While students are working, the instructor will move around the class helping where necessary just as one would do in a lab session. More than one problem or question is assigned at a time so the more advanced students can progress at their own speed. When most of the class has completed the important aspects of the assigned work, solutions are thoroughly discussed before the next group of problems is undertaken. These discussions are extremely important. Students are encouraged to offer their own solutions, which the instructor and others criticize in

a constructive manner, emphasizing the main points of theory involved and stressing the technique of problem solving. When essay type answers are covered, the importance of correct English is also emphasized.

Content of the Program

In order to give an idea of the topics covered and the length of time devoted to each one, a schedule of the program is outlined below:

First Week

Monday A.M.

Introduction—Study methods; writing and grading the exam.

Theory—Accounting research bulletins; terminology bulletins.

Monday P.M.

Partnerships—Division of profits; admission and withdrawals; liquidation.

Tuesday

Assets and liabilities—Inventories; fixed assets; investments.

Wednesday A.M.

Assets and liabilities—Bonds and mortgages.

Wednesday P.M.

Financial statements—Form and analysis; periodic income measurement.

Thursday

Financial statements—Accruals and deferrals; statements of funds; cash flow statements; single entry.

Friday

Corporate equities—Issuance, acquisition and retirement of corporate shares; distributions of capital and income; surplus and reserves; quasi-reorganizations.

Saturday A.M.

Insolvencies and receiverships—Statement of affairs; realization and liquidation statement.

Saturday P.M.

Estates and trusts—Income and corpus; charge and discharge statement.

Second Week

Monday

Cost accounting—Job order and process costs; standard costs and variances.

Tuesday A.M.

Cost accounting—Direct costing; break-even analysis; budgeting.

Tuesday P.M.

Auditing—Standards; procedures.

Wednesday

Auditing—Internal control; audit reports; professional ethics.

Thursday A.M.

Sundry topics—Insurance and fire loss; installment and consignment sales; branch accounting.

Thursday P.M.

Government and institutional accounting—Budgets; funds; financial statements.

Friday

Consolidations—Business combination; inter-company items; working papers; statements.

Saturday

Consolidations—Consolidated income statements; review.

It will be noted from the subject matter covered that no attempt is made to include law or federal income taxes. Because all the participants have been in public practice, they normally have sufficient background in tax work to handle this part of the examination without formalized study. Law is somewhat apart from the other three sections and can safely be ignored without affecting a candidate's preparation for auditing, practice, or theory. Students are advised to obtain a good CPA law review text and to conduct their own program of study in this area.

Actual problems and theory questions are assigned from a standard CPA review text and are supplemented with material from more recent examinations. Material from these two sources is about equally divided. As an ideal, five to eight theory questions and three problems should be

covered in one day. The proportion varies, however; sometimes one day's work will include ten or eleven theory questions and only two problems. This is considered to be an ideal since most of the students do not finish all of the assigned work. In order to keep moving at a rapid pace, it is advisable to deliberately assign more work than can possibly be completed. The instructor does manage, however, to discuss the solutions of *all* the assigned material, and tries to encourage students to make a start at least on all problems and questions rather than to solve completely only part of them.

The judgment of an experienced instructor is important at this juncture since there is always the danger of discouraging a group when insufficient time is available. The instructor must be prepared to furnish individual assistance as required because students will work at varying degrees of speed. Many of them must be urged to move on to the next question or problem before completing the previous one. Where time is so short they must be convinced that more is to be gained by analyzing several problems rather than by fully completing just a few. If ineffective assistance is offered during the lab sessions, many of the students will understandably become completely frustrated.

Conclusions

Two weeks at this pace is a grueling

experience for students and instructors alike. Nevertheless, every applicant who has ever started the course has stayed with it until the end. It will be noticed that the course is concluded with Consolidations. Although this may not be the most appropriate sequence, it has been deliberately placed at the end because it has been found that most students have a very limited background in this area and are anxious to learn as much as they can about it. It has also been found that if by any chance a student has become over-confident during the sessions, a couple of days on Consolidations will dispel any conceited notions.

Despite the intensive nature of the course, two weeks are hardly enough time to prepare adequately for the CPA examinations. It is emphasized that these two weeks are only a beginning. The program is simply an attempt to reorient the student who has lost the habit of systematic study, to force him to discipline himself to carry on a program of preparation for the exams after the course has terminated, and to point out specific weaknesses in his background. If the candidate were to rest on his laurels until November, the examination results would certainly be disastrous. On the other hand, the degree of success attained by participants in this course strengthens our conviction that these two short weeks do start them on the road to successful candidacy.

ESSENTIAL SUBJECT MATTER FOR A ONE-YEAR BASIC
ACCOUNTING COURSE OFFERED TO
NON-ACCOUNTING MAJORS*

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A prevalent opinion, as evidenced by accounting literature, is that the elementary accounting course is designed primarily for students who will major in accounting. Accounting literature¹ also indicates a majority of the students who enroll in the elementary accounting course will *not* major in accounting. This seems to imply that the design of the elementary accounting course and its use are not correlated as successfully as they could be.

Although the results of some studies reveal that one elementary accounting course is adequate for all business students,² the results of other studies indicate that some accounting educators believe a separate course should be established for non-accounting majors.³ These studies have not provided a satisfactory solution, although the underlying belief seems to be that the non-accounting major should attain a much broader concept of accounting from the elementary course than the accounting major.

In view of the numerous questions which had been raised by some members of the teaching profession, a study was recently attempted by this writer to secure a comprehensive picture of essential subject matter for non-accounting majors. An answer was sought to the question: What do executives of successful management firms, members of the university teaching profession, certified public accountants employed by national accounting firms, and graduates of the University of Miami's School of Business Administration consider essential subject matter for study in a one-year basic accounting course offered to non-accounting majors in Schools of Business Administration?

Data were collected from primary sources through the use of a questionnaire which included topics taken from an arbitrary selection of 23 introductory accounting texts. One thousand and eighty-seven questionnaires were mailed, of which 254 were answered. Recipients of the questionnaire were asked to check each topic listed in any *one* of four ways: (1) Was the inclusion of the topic very important? (2) Was the inclusion of the topic desirable? (3) Was the study of the topic to be excluded from the course? (4) Was there "no opinion" concerning a particular topic?

TOPICS TO BE INCLUDED

Based on a majority opinion of at least 51 per cent of the respondents in at least three groups of the respondents—executives, professors, CPAs, or alumni—thirty-four topics were considered to be essential subject matter for inclusion for understanding and interpreting with technical proficiency in a one-year basic accounting course offered to non-accounting

* Developed from the author's unpublished Master's Thesis, University of Miami, 1960.

¹ Jim G. Ashburne, "Accounting Training for Non-Accounting Majors," *THE ACCOUNTING REVIEW*, 30: 134-139, p. 135, January 1955. Alvin C. Beckett, "Essential Accounting for Laymen," Unpublished Ed.D. Dissertation, New York, New York University, 1955, Microfilm, p. 9. Frank S. Kaulback, Jr., "Elementary Accounting and the Non-Accounting Major—A Proposal," *THE ACCOUNTING REVIEW*, 26: 102-194, p. 102, January 1951. Harry D. Kerrigan, "Some Current Problems in the Teaching of Accounting," *THE ACCOUNTING REVIEW*, 27: 79-88, pp. 85-86, January 1952.

² Charles W. Bastable, Jr., "Elementary Accounting for General-Business Students," Unpublished Ph.D. Dissertation, New York, Columbia University, 1952, Microfilm, p. 15.

³ Harry Ralph Price, "Accounting Education at the University Level," Unpublished Ph.D. Dissertation, Evanston, Illinois, Northwestern University, 1954, pp. 101-105.

TABLE I

SUMMARY OF THE MAJORITY OPINIONS OF RESPONDENTS ON TOPICS TO BE INCLUDED FOR UNDERSTANDING AND INTERPRETING WITH TECHNICAL PROFICIENCY IN A BASIC COURSE FOR NON-ACCOUNTING MAJORS

<i>Topics</i>	<i>Executives</i>	<i>Professors</i>	<i>CPAs</i>	<i>Alumni</i>
Rule of debit and credit.....	T	T	T	T
Account classification.....	G	T	T	T
Accounting control.....	T	T	T	T
Accounting equation.....	T	T	T	T
Balance sheet—classification as to current and long-term assets and liabilities, and net worth.....	T	T	T	T
Income statement—classification as to sales, cost of goods sold, and operating expenses.....	T	T	T	T
Current-operating performance concept.....	G	T	T	
Cash basis accounting.....	T	G	T	T
Accrual basis accounting.....	T	T	T	T
Income realization.....	T	T	T	G
Expense accrual.....	T	T	T	G
Expense and revenue matching.....	T	T	T	
Depreciation method—straight-line.....	G	T	T	T
Capital and revenue differentiation.....	T	T	T	G
Going-concern convention.....	T	T	T	
Concept of cost and its definition.....	T	T	T	T
Effect of fluctuating price-level changes on historical costs.....	G	T	T	
Doctrine of full disclosure.....	T	T	T	
Doctrine of materiality.....	T	T	T	
Significance of disclosing the valuation policy used in inventories.....	G	T	T	T
Balance Sheets: in report form.....	G	T	T	T
in comparative form.....				
report of financial position to emphasize working capital position.....	G	T	T	TG
Balance Sheet ratios and percentages.....	G	T	T	T
Income Statement percentages.....	G	T	T	T
Trends in Balance Sheet ratios and percentages.....	G	T	T	T
Trends in Income Statement percentages.....	GG	T	T	T
Budgetary Planning.....	TG	T	T	T
Accounting entity concept.....	T	T	T	T
Characteristics of a corporate form of organization.....	T	T	T	T
Retained earnings.....	G	T	T	T
Doctrine of consistency.....	T	T	T	
Doctrine of conservatism.....	G	T	T	
Importance of consistency in inventory pricing and in depreciation.....	T	T	T	G

(T) Included for Understanding and Interpreting with Technical Proficiency.

(G) Preferred Inclusion for General Understanding.

(TG) Divided in Opinions as to the Degree of Inclusion.

majors in Schools of Business Administration. Table I presents these topics, together with an indication as to the groups whose majority opinion was the deciding factor for including a particular topic and the degree of its inclusion.

The CPAs favored inclusion of all thirty-four topics listed in Table I for understanding and interpreting with technical proficiency. However, the executives preferred fourteen topics, the professors preferred one topic, and the alumni preferred five topics for inclusion for general understanding only.

The executives and alumni were divided in their opinions concerning the degree of inclusion of one topic, and the alumni did not include seven of the listed topics.

Based on a majority opinion of at least 51 per cent of the respondents in at least three groups, eighty-nine topics were considered to be essential subject matter for inclusion for general understanding in a one-year basic accounting course offered to non-accounting majors in Schools of Business Administration. Table II presents these topics, together with an indication as to the groups whose majority opinion was

Chart
and
Bank
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and
Genera
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Closin
Cash c
Notes
Notes
Interes
Negoti
Accru
Accru
Install
Inven

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Deple
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Cost

(T)

TABLE II

SUMMARY OF THE MAJORITY OPINIONS OF RESPONDENTS ON TOPICS TO BE INCLUDED FOR GENERAL UNDERSTANDING IN A BASIC COURSE FOR NON-ACCOUNTING MAJORS

Topics	Executives	Professors	CPAs	Alumni
Chart of accounts—the system used for numbering, arranging and describing the accounts.	G		G	G
Bank reconciliation.	G	G	G	T
General ledger.	G	G	G	T
Subsidiary ledgers.	G	G	G	G
Internal control.	G	G	T	G
Purchases and sales—business procedures and business papers and their relationship to the accounting system.	G	G	G	T
General journal.	G	G	G	T
Special journals.	G	G	G	T
Inventory accounting: perpetual basis periodic basis.	G	G	G	G
Inventory taking.	G	G	G	G
Payroll taxes.	G	G	G	G
Accounting period convention.	G	T	G	
Adjusting entries.	G	G	G	T
Closing entries.	G	G	G	G
Cash discounts.	G	G	G	T
Notes receivable.	G	G	G	TG
Notes payable.	G	G	G	TG
Interest and discount on notes.	G	G	G	T
Negotiable instruments.	G	G	G	T
Accrued and Unearned Income.	G	G	G	G
Accrued and Prepaid Expenses.	G	G	G	G
Installment sales.	G	G	G	G
Inventory cost methods: Specific identification.	G	G	G	
LIFO.	G	G	TG	G
FIFO.	G	G	G	G
Weighted average.	G	G	G	
Retail.	G	G	G	
Gross profit.	G	G	G	T
Standard cost.	G	G	G	T
Depreciation methods: Machine-hour.	G	G	G	G
Unit-of-production.	G	G	G	G
Declining-balance.	G	G	G	TG
Sum-of-years-digits.	G	G	G	TG
Depletion.	G	G	G	
Disposal of fixed assets.	G	G	G	G
Trade and quantity discounts.	G	G	G	
Cash discounts on purchases.	G	G	G	T
Historical costs.	G	T	G	
Current replacement costs.	G	T	G	G
Standards of statement construction.	G	G	T	
Footnotes to financial statements.	G	G	T	
Income Statements: in one-step form. in multiple-step form.	G	G	T	G
Statements: Combined Income and Retained Earnings.	G	G	G	G
Proprietorship's Capital.	G	G	G	G
Partners' Capital.	G	G	G	G
Retained Earnings.	G	G	G	G
Application of Funds.	G	G	G	G
Cash Receipts and Disbursements.	G	G	G	T
Consolidated Balance Sheets.	G	T	G	G
Consolidated Income Statements.	G	T	G	G
Consolidated Statement of Retained Earnings.	G	G	G	G
Supporting schedules to: Balance Sheets. Income Statements.	G	G	G	G
Comparative schedules of operating expenses.	G	G	G	G
Cost of Goods Manufactured Schedules.	G	G	G	G

(G) Included for General Understanding.

(T) Preferred Inclusion for Understanding and Interpreting with Technical Proficiency.

(TG) Divided in Opinions as to the Degree of Inclusion.

TABLE II.—Continued

Topics	Executives	Professors	CPAs	Alumni
Break-Even Charts.....	G	T	G	G
Standards of auditing procedure.....	G	T	G	G
Characteristics of a proprietorship form of organization.....	G	G	G	T
Characteristics of a partnership form of organization.....	G	G	G	T
Division of net profit or loss to partners.....	G	G	G	T
Capital stock: classes.....	G	TG	G	T
values.....	G	G	G	T
subscriptions.....	G	G	G	T
premium or discount.....	G	G	G	T
Sale of capital stock for: cash.....	G	G	G	T
other assets.....	G	G	G	T
Appraisal surplus.....		G	G	G
Stock options.....	G		G	G
Dividends: cash.....	G	G	G	G
stock.....	G	G	G	G
Redemption of capital stock.....	G	G	G	G
Mortgages payable.....	G	G	G	G
Principles of cost transference.....	G		G	G
Manufacturing costs in a company:				
without a cost system.....	G		G	G
with a job order cost system.....	G		G	G
with a process cost system.....	G		G	G
with a standard cost system.....	G		G	G
Product versus period costs.....	G	G	G	G
Variance under a standard cost system.....	G	G	G	G
Allocation of factory overhead.....	G	G	G	G
Fixed and variable costs.....	G	T	G	G
Rule of the integrity of invested capital.....	G	G	G	G
Allowance for Bad Debts.....	G	G	G	G
Allowance for Sales Returns.....	G	G	G	G
Allowance for Sales Discounts.....	G	G	G	G
"Lower of cost or market" concept for marketable securities.....	G	G	G	G
Amortization of intangible asset: goodwill.....	G	G	G	G

the deciding factor for including a particular topic and the degree of its inclusion.

The executives favored inclusion for general understanding all but five of the topics listed. The professors and CPAs did not favor inclusion of ten items, and the alumni did not favor inclusion of nine items. However, the professors preferred seven topics, the CPAs preferred six topics, and the alumni preferred twenty-one topics, for inclusion for understanding and interpreting with technical proficiency.

The professors and CPAs were divided in their opinions concerning the degree of inclusion of one topic, and the alumni were divided in their opinions concerning five topics.

Based on a majority opinion of at least 51 per cent of the respondents in at least

three groups, five additional topics were considered to be essential subject matter for inclusion in a one-year basic accounting course offered to non-accounting majors in Schools of Business Administration. However, opinions concerning the degree of inclusion are inconclusive since two groups favored inclusion for general understanding, and two groups preferred inclusion for understanding and interpreting with technical proficiency. These data are presented in Table III.

TOPICS NOT INCLUDED

Based on the opinion of at least 50 per cent of the respondents in two or more groups, eighty-nine topics were *not* included in the course under consideration. Table IV presents these topics, together with an

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TABLE III

SUMMARY OF THE MAJORITY OPINIONS OF RESPONDENTS ON TOPICS TO BE INCLUDED IN A
BASIC COURSE FOR NON-ACCOUNTING MAJORS
(Degree of inclusion inconclusive)

Topics	Executives	Professors	CPAs	Alumni
Trial balances.....	G	T	G	T
Assembling and summarizing accounting data.....	G	T	G	T
Balance Sheets in account form.....	G	G	T	T
Income Statements in comparative form.....	G	T	T	G
"Lower of cost or market" concept for inventories.....	G	T	T	G

(G) Preferred Inclusion for General Understanding.

(T) Preferred Inclusion for Understanding and Interpreting with Technical Proficiency.

TABLE IV

SUMMARY OF THE MAJORITY OPINIONS OF RESPONDENTS ON TOPICS NOT INCLUDED IN A
BASIC COURSE FOR NON-ACCOUNTING MAJORS

Topics	Executives	Professors	CPAs	Alumni
Work sheets for a: merchandising company.....	x		x	
manufacturing company.....	x		x	
departmentalized company.....	x	x	x	
Home Office with Branches.....	x	x	x	
Parent Company and Subsidiary.....	x	x	x	x
Petty cash fund.....	x	x	x	
Voucher system.....	x	x	x	
Factory ledger.....	x	x	x	x
Departmental accounting.....	x	x	x	x
Branch Office accounting.....	x	x	x	x
"Split" transactions.....	x	x	x	x
Voucher register.....	x	x	x	
Practice set.....	x	x	x	
Accounting machines.....	x	x	x	
Sales taxes.....	x	x	x	
Real and personal property taxes.....	x	x	x	
Workmen's Compensation Insurance.....	x	x	x	
Payroll.....	x		x	
Personal income tax returns.....	x		x	
Corporate tax returns.....	x	x	x	
Partnership return of income.....	x	x	x	
Taxes on right to transfer property.....	x	x	x	x
Capital gains and losses on sales of capital assets.....			x	
Alternative adjusting entries.....	x	x	x	x
Reversing entries.....	x	x	x	
Ruling and balancing: journals.....	x	x	x	
ledgers.....	x	x	x	
Correcting entries due to: bookkeeping errors.....	x	x	x	
accounting errors.....	x	x	x	x
Clean surplus concept.....		x		
Discounting notes.....	x		x	
Dishonored notes.....	x	x	x	
Consignments.....	x	x	x	
Long-term construction jobs.....	x	x	x	x
Depreciation method: "Interest".....		x	x	
Leasehold improvements and leaseholds.....		x	x	x
Imputed costs.....	x	x	x	x
Trade-in of fixed assets:				
Recognition of loss/gain on exchange.....	x	x	x	
Non-recognition of loss/gain on exchange.....	x	x	x	
Actuarial computations.....	x	x	x	x
Statements: Pictorial and graphic.....		x	x	

(Continued on next page)

TABLE IV—Continued

indication as to the groups whose majority opinion was the deciding factor in not including a particular topic.

CONCLUSIONS

The results of this study indicate that where inclusion of a topic was favored by a

majority of the respondents, more topics were included for general understanding than for understanding and interpreting with technical proficiency. But there was agreement that accounting principles as topics should be included in the course under consideration for understanding and

interpreting with technical proficiency.

Significantly among the topics *not* included were many which are traditionally covered in elementary texts: Work Sheets, Voucher System, Practice Set, Reversing and Alternative Adjusting Entries, Ruling and Balancing Journals and Ledgers, Admission of a Partner by Purchase of an Investment or an Investment Considering Goodwill or Bonus, Defaulted Subscriptions of Capital Stock, Treasury Stock Transactions, and Sale of Registered and Coupon Bonds: Determining Interest on Bonds Issued Between Interest Dates, Amortizing Premium or Discount.

Additional research is needed to indicate the degree of coverage, chapter division, number of hours, and other pertinent details concerning the topics favored for inclusion in a basic course for non-accounting majors. There seems to be a great need

for the development of a satisfactory text for use in an accounting course for the non-accountant. Bookkeeping details involving mechanical techniques (i.e., Reversing and Alternative Adjusting Entries, Ruling and Balancing Journals and Ledgers) should be eliminated as much as possible. Some of the topics should be included for understanding and interpreting with technical proficiency (ex., Accounting Principles, Financial Statements) but the majority of the topics should be included for general understanding only.

If a text is properly developed, it should receive widespread approval, thus solving many existing controversies as to what is essential subject matter for a one-year basic accounting course offered to non-accounting majors in Schools of Business Administration.

PROFESSIONAL EXAMINATIONS

ACCOUNTING PRACTICE

JOHN H. CHAMBERLAIN

THE following problems were prepared by the Board of Examiners of the American Institute of Certified Public Accountants and were presented as the first half of the C.P.A. examination in accounting practice on May 17, 1961. The candidates were required to solve all problems. The suggested time allowances are as follows:

Problem 1	25 to 35 minutes
Problem 2	50 to 80 minutes
Problem 3	25 to 40 minutes
Problem 4	35 to 55 minutes
Problem 5	40 to 60 minutes

Number 1

Part A

Given below are terms appearing in the federal income tax code, regulations and explanations.

- | | |
|--------------------------------|---------------------------------|
| A. Adjusted gross income | N. Fair market value |
| B. Capital contribution | O. Gift |
| C. Capital gain or loss | P. Gross income |
| D. Consent dividend | Q. Liquidating dividend |
| E. Constructive dividend | R. Nontaxable exchange |
| F. Constructive receipt | S. Patronage dividend |
| G. Controlled corporation | T. Percentage depletion |
| H. Corporate dividend | U. Personal holding company |
| I. Cost depletion | V. Regulated investment company |
| J. Deferred income | W. Substituted basis |
| K. Dividend received credit | X. Taxable income |
| L. Dividend received deduction | Y. Wash sale |
| M. Dividend received exclusion | Z. None of the above |

Place the appropriate letter in the column on the answer sheet indicating your choice of the best term applying to the statements below. The terms may be used more than once.

1. A corporation whose income was derived solely from dividends, rents and mineral royalties, and during the last six months of its year 50% or more of the value of the outstanding stock is owned by five or fewer stockholders.
2. The basis used to determine gain on sale of a gift.
3. Sale of property to a corporation by shareholder for an amount in excess of its value.
4. An amount which is computed from an individual's dividends received from domestic corporations and is computed at a rate of 4% subject to certain limitations. The amount so computed for the individual is applied against the tax.

5. Income subject to tax less certain deductions which are permitted by law if incurred in trade or business.
6. Income from all sources minus all allowable income tax deductions and exemptions.
7. Distributions by a corporation after stockholders had agreed to reduce the size of the company.
8. At the request of a retiring officer-stockholder, a substantial advance was cancelled by the corporation.
9. The subtraction from a corporation's taxable income of 85% of dividends received from taxable domestic corporations with certain limitations.
10. Money received in error from a debtor by a taxpayer in excess of an agreed amount.
11. The cancellation by a stockholder of a debt owed him by the taxpayer corporation.
12. An allowance permitted in case of mine and mineral deposits directly related to the gross income from the property. This allowance is limited to 50% of the taxable income from the property, computed without the allowance.
13. Distribution by a cooperative to avoid payment of income tax by maintaining tax-exempt status.
14. The trade-in of obsolete production machinery for new production machinery by a corporation. "Boot" is paid by the corporation.

Part B

Smith, who is 57 years of age, owns 70% of the stock of Smith's Food Stores. He proposes to sell all of his stock to his son in consideration for an annuity contract whereby the son agrees to pay his father a certain sum each year for the remainder of his father's lifetime.

The following details include all information necessary to complete the required computations.

Estimated fair market value of Mr. Smith's 70% stock interest.....	\$616,000
Mr. Smith's tax basis in the stock of Smith's Food Stores.....	\$246,400
Annual payment.....	\$ 40,000
Mr. Smith's life expectancy (to nearest whole year).....	20 years

On the answer sheet provided, print next to the number of each statement the capital letter of the answer that correctly completes the statement.

15. The percentage of the annual payment which can be excluded from ordinary income is:
 - a. 30.8%
 - b. 40%
 - c. 77%
 - d. None of these
16. The proportion of the annual payment which is treated as ordinary income will:
 - a. Remain constant throughout the expected life of the annuity.
 - b. Increase throughout the expected life of the annuity.
 - c. Decrease throughout the expected life of the annuity.
 - d. None of these.

Part C

Wall owned unimproved real estate which cost him \$7,500 in 1950. The property was condemned on July 1, 1958 by the State as additional right-of-way. On August 1, 1959 Wall received \$30,000 as a condemnation award.

Wall, who files his return on a calendar year basis, elected to use involuntary conversion and replacement provisions of the Internal Revenue Code. No extension of the period for replacement was obtained. He has no other transactions involving investment or depreciable property.

Given below are various situations. Each situation is to be considered as a separate and distinct set of facts. On the answer sheet provided, print next to the number of each statement the capital letter of the answer that correctly completes the statement.

Assume Wall purchased unimproved real estate from the proceeds at a cost of \$25,000 on December 1, 1960.

17. The gain or loss recognized for federal income tax purposes is:
 - a. \$5,000
 - b. \$17,500
 - c. \$22,500
 - d. None of these.
18. The gain or loss would be a:
 - a. Short-term capital gain or loss.
 - b. Long-term capital gain or loss.
 - c. Ordinary gain or loss.
 - d. None of these.
19. The basis of the property purchased is:
 - a. \$ 7,500
 - b. \$12,500
 - c. \$25,000
 - d. None of these.

Assume Wall purchased unimproved real estate from the proceeds at a cost of \$25,000 on January 15, 1961.

20. The gain or loss recognized for federal income tax purposes is:
 - a. \$ 5,000
 - b. \$17,500
 - c. \$22,500
 - d. None of these.
21. The basis of the property purchased is:
 - a. \$ 7,500
 - b. \$12,500
 - c. \$25,000
 - d. None of these.
22. Any gain or loss recognized should be reported in the return for the taxable year:
 - a. 1959
 - b. 1960
 - c. 1961
 - d. Of final disposition.

Assume Wall purchased unimproved real estate from the proceeds at a cost of \$40,000 on November 15, 1960.

23. The gain or loss recognized for federal income tax purposes is:
 - a. \$ 5,000
 - b. \$10,000
 - c. \$22,500
 - d. None of these.
24. The basis of the property purchased is:
 - a. \$ 7,500
 - b. \$17,500
 - c. \$40,000
 - d. None of these.

Assume Wall purchased investment property, consisting of land and a building from the proceeds for \$30,000 on October 1, 1960.

25. The gain or loss recognized for federal income tax purposes is:
 - a. Zero (no recognition of gain or loss)
 - b. \$ 7,500
 - c. \$22,500
 - d. None of these.

Part D

The following questions relate to federal income tax in connection with partnerships. Place an "X" in the appropriate column on the answer sheet indicating whether or not the statement is correct.

26. For federal income tax purposes the term "partnership" may include any of the following: a syndicate, group, pool, joint venture, or other unincorporated organizations which are not a trust or estate.

27. A partnership can take the net operating loss deduction in computing taxable income.

28. Partnership capital gains and losses are reported on the partnership return.

29. A partner's distributive share of items of depreciation, in absence of any agreement, will be allocated to the partners in proportion to cost of the depreciable property contributed by each partner.

30. A partnership on a June 30 fiscal year pays partner A a monthly salary. Partner A reporting on a calendar year basis will report the salary received July through December 1959 on his return filed for 1959.

31. A partnership taxable year is closed by the death of a partner even though the partnership is not terminated, as a general rule.

32. The basis of contributed property in the hands of the partnership is the same as the adjusted basis of the property to the contributing partner.

33. A son gave interests to his parents in a family partnership formed to reduce taxes. If capital is a material income producing factor, the partnership is valid.

Number 2

In connection with an audit of cash of Distributors, Inc., as at December 31, 1960 the following information has been obtained:

1. Balance per bank

11/30/60.....	\$ 185,700
12/31/60.....	193,674
2. Balance per books

11/30/60.....	154,826
12/31/60.....	167,598
3. Receipts for the month of December 1960

Per bank.....	1,350,450
Per books.....	2,335,445
4. Outstanding checks

11/30/60.....	63,524
12/31/60.....	75,046
5. Dishonored checks are recorded as a reduction of cash receipts. Dishonored checks which are later redeposited are then recorded as a regular cash receipt. Dishonored checks returned by the bank and recorded by Distributors, Inc. amounted to \$6,250 during the month of December 1960; according to the books \$5,000 were redeposited. Dishonored checks recorded on the bank statement but not on the books until the following months amounted to \$250 at November 30, 1960 and \$2,300 at December 31, 1960.
6. On December 31, 1960 a \$2,323 check of the ABC Company was charged to the Distributors, Inc. account by the bank in error.
7. Proceeds of a note of the Able Company collected by the bank on December 10, 1960 were not entered on the books:

Principal.....	\$2,000
Interest.....	20
	<hr/>
	2,020
Less collection charge.....	5
	<hr/>
	\$2,015
	<hr/>

8. The company has hypothecated its accounts receivable with the bank under an agreement whereby the bank lends the company 80% on the hypothecated accounts receivable. Accounting for and collection of the accounts are performed by the company, and adjustments of the loan are made from daily sales reports and daily deposits.

The bank credits the Distributors, Inc. account and increases the amount of the loan for 80% of the reported sales. The loan agreement states specifically that the sales report must be accepted by the bank before Distributors, Inc. is credited. Sales reports are forwarded by Distributors, Inc. to the bank on the first day following the date of sales.

The bank allocates each deposit 80% to the payment of the loan and 20% to Distributors, Inc. account.

Thus, only 80% of each day's sales and 20% of each collection deposit are entered on the bank statement.

Distributors, Inc. accountant records the hypothecation of new accounts receivable (80% of sales) as a debit to cash and a credit to the bank loan as of the date of sales. One hundred per cent of the collections on accounts receivable is recorded as a cash receipt; 80% of the collections is recorded in the cash disburse-

ments book as a payment on the loan. In connection with the hypothecation the following facts were determined:

- a. Included in the deposits in transit is cash from the hypothecation of accounts receivable. Sales were \$40,500 on November 30, 1960 and \$42,250 on December 31, 1960. The balance of the deposit in transit at December 31, 1960 was made up from collections of \$32,110 which were entered on the books in the manner indicated above.
 - b. Collections on accounts receivable deposited in December other than deposits in transit totaled \$1,200,000.
 - c. Sales for December totaled \$1,450,000.
9. Interest on the bank loan for the month of December charged by the bank but not recorded on the books amounted to \$6,140.

Required:

- a. Prepare a bank reconciliation as of November 30, 1960 and December 31, 1960 and reconciliations of cash receipts and disbursements per bank with cash receipts and disbursements per books for the month of December 1960. (Assume that you have satisfied yourself as to the propriety of the above information.) Show computations where applicable.

- b. Prepare adjusting journal entries as required to correct the cash account at December 31, 1960.

Number 3

The Installment Jewelry Company has been in business for five years but has never had an audit made of its financial statements. Engaged to make an audit for 1960, you find that the company's balance sheet carries no allowance for bad accounts, bad accounts having been expensed as written off and recoveries credited to income as collected. The company's policy is to write off at December 31 of each year those accounts on which no collections have been received for three months. The installment contracts generally are for two years.

Upon your recommendation the company agrees to revise its accounts for 1960 to give effect to bad account treatment on the reserve basis. The reserve is to be based on a percentage of sales which is derived from the experience of prior years.

Statistics for the past five years are as follows:

	<i>Charge Sales</i>	<i>Accounts Written off and Year of Sale</i>		<i>Recoveries and Year of Sale</i>	
1956.....	\$100,000	(1956) \$550			
1957.....	250,000	(1956) 1,500	(1957) \$1,000		(1956) \$100
1958.....	300,000	(1956) 500	(1957) 4,000	(1958) \$1,300	(1957) 400
1959.....	325,000	(1957) 1,200	(1958) 4,500	(1959) 1,500	(1958) 500
1960.....	275,000	(1958) 2,700	(1959) 5,000	(1960) 1,400	(1959) 600

Accounts receivable at December 31, 1960 were as follows:

1959 sales.....	\$ 15,000
1960 sales.....	135,000
	<u><u>\$150,000</u></u>

Required:

Prepare the adjusting journal entry or entries with appropriate explanations to set up the Allowance for Bad Accounts. (Support each item with organized computations; income tax implications should be ignored.)

Number 4

The net changes in the balance sheet accounts of X Company for the year 1960 are shown below:

	<i>Debit</i>	<i>Credit</i>
Investments.....		\$25,000
Land.....	\$ 3,200	
Buildings.....	35,000	
Machinery.....	6,000	
Office equipment.....		1,500
Allowance for depreciation:		
Buildings.....		2,000
Machinery.....		900
Office equipment.....	600	
Discount on bonds.....		2,000
Bonds payable.....		40,000
Capital stock—preferred.....	10,000	
Capital stock—common.....		12,400
Premium on common stock.....		5,600
Retained earnings.....		6,800
Working capital.....	37,400	
		<u><u>\$94,200</u></u>
		<u><u>\$94,200</u></u>

Additional information:

1. Cash dividends of \$18,000 were declared December 15, 1960, payable January 15, 1961. A 2% stock dividend was issued March 31, 1960, when the market value was \$12.50 per share.
2. The investments were sold for \$27,500.
3. A building which cost \$45,000 and had a depreciated basis of \$40,500 was sold for \$50,000.
4. The following entry was made to record an exchange of an old machine for a new one:

Machinery.....	\$13,000
Allowance for depreciation—Machinery.....	5,000
Machinery.....	
Cash.....	\$ 7,000
	11,000

5. A fully depreciated office machine which cost \$1,500 was written off.
6. Preferred stock of \$10,000 par value was redeemed for \$10,200.
7. The company sold 1,000 shares of its common stock (par value \$10) on June 15, 1960 for \$15 a share. There were 13,240 shares outstanding on December 31, 1960.

Required:

A worksheet and statement of source and application of funds for the year 1960.

Number 5

The XYZ Corporation is a small manufacturing company producing a highly-flammable cleaning fluid. On May 31, 1960 the company had a fire which completely destroyed the processing building and the in-process inventory; some of the equipment was saved.

The cost of the fixed assets destroyed and their related allowances for depreciation at May 31, 1960 were:

	<i>Cost</i>	<i>Allowance</i>
Building.....	\$40,000	\$24,667
Machinery and equipment.....	15,000	4,375

At present prices the cost to replace the destroyed property would be: building, \$80,000; machinery and equipment, \$37,500. At the time of the fire it was determined that the destroyed building was 62.5% depreciated, and the destroyed machinery and equipment was 33.3% depreciated. The insurable value of all the building and machinery and equipment was determined to be \$75,000.

After the fire a physical inventory was taken. The raw materials were valued at \$30,000, the finished goods at \$60,000, and supplies at \$5,000.

The inventories on January 1, 1960 consisted of:

Raw materials.....	\$ 15,000
Work-in-process.....	50,000
Finished goods.....	70,000
Supplies.....	2,000
Total.....	\$137,000

A review of the accounts showed that the sales and gross profit for the last five years were:

	<i>Sales</i>	<i>Gross profit</i>
1955.....	\$300,000	\$ 86,200
1956.....	320,000	102,400
1957.....	330,000	108,900
1958.....	250,000	62,500
1959.....	280,000	84,000

The sales for the first five months of 1960 were \$150,000. Raw material purchases were \$50,000. Freight on purchases was \$5,000. Direct labor for the five months was \$40,000; for the past five years manufacturing overhead was 50% of direct labor.

Insurance on the property and inventory was carried with three companies. Each policy included an 80% coinsurance clause. The amount of insurance carried with the various companies was:

	<i>Building, Machinery and Equipment</i>	<i>Inventories</i>
Company A.....	\$30,000	\$38,000
Company B.....	20,000	35,000
Company C.....	15,000	15,000

The cost of cleaning up the debris was \$7,000. The value of the scrap salvaged from the fire was \$600.

Required:

- Compute the value of inventory lost.
- Compute the expected recovery from each insurance company.

Solution to Problem 1

- A.
- U—Personal holding company
 - W—Substituted basis
 - E—Constructive dividend
 - K—Dividend received credit
 - A—Adjusted gross income
 - X—Taxable income
 - Q—Liquidating dividend
 - E—Constructive dividend
 - L—Dividend received deduction
 - Z—None of the above
 - B—Capital contribution
 - T—Percentage depletion
 - S—Patronage dividend
 - R—Nontaxable exchange

B.

- c.—77%
- a.—Remain constant throughout the expected life of the annuity

- C.
- a.—\$5,000
 - b.—Long-term capital gain or loss
 - a.—\$7,500
 - c.—\$22,500
 - c.—\$25,000
 - a.—1959
 - d.—None of these
 - b.—\$17,500
 - a.—No gain or loss recognized

D.

	<i>Yes</i>	<i>No</i>
26.	x	
27.		x
28.	x	
29.		x
30.		x
31.		x
32.	x	
33.	x	

*Solution to Problem 2**DISTRIBUTORS, INC.***A.**(1) *Bank Reconciliations*

	<i>November 30, 1960</i>			<i>December 31, 1960</i>
	<i>Per Books</i>	<i>Per Bank</i>	<i>Per Books</i>	<i>Per Bank</i>
Unadjusted balance at end of month.....	\$154,826	\$185,700	\$167,598	\$193,674
Outstanding checks.....		(63,524)		(75,046)
Deposit in transit (20% of collections on accounts receivable).....				6,422
Reversal of anticipated credit for accounts to be hypothecated (80% of sales on the last day of each month).....	(32,400)		(33,800)	
Dishonored checks not recorded.....	(250)		(2,300)	
Bank error.....				2,323
Proceeds of Able Company note not recorded.....			2,015	
Interest on bank loan.....			(6,140)	
Adjusted balance at end of month.....	\$122,176	\$122,176	\$127,373	\$127,373

(2) (I) *December Cash Disbursements:*

	<i>Per Books</i>	<i>Per Bank</i>
Cash receipts—unadjusted.....	\$2,335,445	\$1,350,450
Reversal of anticipated credit for accounts to be hypothecated:		
11-30-60.....	32,400	
12-31-60.....	(33,800)	
Adjustment for dishonored checks:		
11-30-60.....	250	
12-31-60.....	(2,300)	
Proceeds of note.....	2,015	
Adjusted cash receipts.....	2,334,010	1,350,450
Cash, 11-30-60—adjusted.....	122,176	185,700
Total.....	2,456,186	1,536,150
Cash, 12-31-60—adjusted.....	127,373	193,674
Cash disbursements.....	\$2,328,813	\$1,342,476

(II) Reconciliation of Receipts and Disbursements:

	<i>Receipts</i>	<i>Disbursements</i>
Per bank.	\$1,350,450	\$1,342,476
80% of December collections (recorded on books as a receipt and a disbursement).	985,688	985,688
Outstanding checks:		
11-30-60.		(63,524)
12-31-60.		75,046
Deposit in transit—12-31-60.	6,422	
Dishonored checks recorded in December.	(8,550)	(8,550)
Bank error.		(2,323)
Per books.	<u>\$2,334,010</u>	<u>\$2,328,813</u>

B. Adjusting Journal Entries:

(1) Bank loan.	\$ 33,800	\$ 33,800
Cash.		
To reverse anticipation of accounts receivable to be hypothecated.	2,300	2,300
(2) Accounts receivable.		
Cash.	2,015	5
To record dishonored checks.		
(3) Cash.	2,000	20
Miscellaneous expense.		
Notes receivable.		
Interest income.		20
To record collection of Able Company note by bank.		
(4) Interest expense.	6,140	6,140
Cash.		
To record interest on bank loan for the month of December.		

Solution to Problem 3

INSTALLMENT JEWELRY COMPANY

Bad debt recoveries.	\$ 600
Provision for bad accounts.	7,100

Allowance for bad accounts.

To set up the allowance for bad accounts computed as follows:

Calculation of bad debt experience rate:

	1956	1957	1958	<i>Total</i>
Charge sales.	\$100,000	\$250,000	\$300,000	<u>\$650,000</u>
Write-offs in:				
1956.	550			\$ 550
1957.	1,500	1,000		2,500
1958.	500	4,000	1,300	5,800
1959.		1,200	4,500	5,700
1960.			2,700	2,700
Total.				<u>\$ 17,250</u>
Recoveries in:				
1957.	100			100
1958.		400		400
1959.			500	500
Total.				<u>1,000</u>
Net write-off.				<u>\$ 16,250</u>
Ratio of net write-off to total charge sales.				<u>24%</u>

Calculation of allowance for bad accounts:

	1959	1960	Total
Charge sales.....	\$325,000	\$275,000	<u>\$600,000</u>
2½% of total charge sales.....			<u>15,000</u>
Write-offs in:			
1959.....	1,500		1,500
1960.....	5,000	1,400	<u>6,400</u>
Total.....			<u>\$ 7,900</u>
Recoveries in 1960.....	600		<u>600</u>
Net write-off.....			<u>7,300</u>
ALLOWANCE REQUIRED AT 12-31-60.....			<u>\$ 7,700</u>

Solution to Problem 4

X COMPANY

STATEMENT OF SOURCE AND APPLICATION OF FUNDS FOR THE YEAR ENDED DECEMBER 31, 1960

SOURCES OF FUNDS:

Operations:	
Operating income.....	\$16,000
Allowance for depreciation.....	<u>13,300</u>
Total.....	<u>\$ 29,300</u>
Sale of investments.....	27,500
Sale of building.....	50,000
Sale of bonds.....	38,000
Sale of stock.....	<u>15,000</u>
Total.....	<u>\$159,800</u>

FUNDS APPLIED:

Purchases of land, building, and machinery.....	94,200
Redemption of preferred stock.....	10,200
Dividends declared.....	<u>18,000</u>
Total.....	<u>\$122,400</u>

NET INCREASE IN WORKING CAPITAL.....

\$ 37,400

CALCULATIONS SUPPORTING STATEMENT OF SOURCE AND APPLICATION OF FUNDS:

(1) Operating income:

Net increase in retained earnings.....	\$ 6,800
Cash dividends declared.....	18,000
Stock dividend (240 shares at \$12.50 per share).....	3,000
Premium paid on redemption of preferred stock.....	<u>200</u>
Total.....	<u>28,000</u>
Less:	
Gain on sale of investments.....	\$2,500
Gain on sale of building.....	<u>9,500</u>
OPERATING INCOME.....	<u>\$ 16,000</u>

(2) Provision for depreciation:

Building:

Net increase in allowance.....	\$ 2,000
Allowance applicable to building sold.....	<u>4,500</u>
Depreciation on building.....	<u>6,500</u>

Machinery:

Net increase in allowance.....	900
Allowance applicable to machine exchanged.....	<u>5,000</u>
Depreciation on machinery.....	<u>5,900</u>

Office equipment:

Net decrease in allowance.....	(600)
Allowance applicable to equipment written off.....	<u>1,500</u>
Depreciation on office equipment.....	<u>900</u>

TOTAL DEPRECIATION.....

\$ 13,300

(3) Purchases of land, building, and machinery:

Land purchased.....

\$ 3,200

Net increase in building account.....

35,000

Cost of building sold.....

45,000

Cost of building purchased.....

80,000

Machinery purchased.....

11,000

TOTAL PURCHASES.....

\$ 94,200

Solution to Problem 5

THE X.Y.Z. CORPORATION

A. Computation of value of inventory destroyed by fire:

Raw materials, work-in-process, and finished goods inventories, January 1, 1960	\$135,000
Raw material purchases.....	50,000
Freight on raw material purchases.....	5,000
Direct labor.....	40,000
Overhead (50% of direct labor).....	20,000
Total.....	<u>250,000</u>
Less cost of sales:	
Sales.....	\$150,000
Less gross profit (average gross profit rate for the preceding five years: 30%).....	<u>45,000</u>
	105,000
Raw materials, work-in-process, and finished goods, May 31, 1960, before fire.....	145,000
Less physical inventory May 31, 1960 after fire:	
Raw material.....	30,000
Finished goods.....	<u>60,000</u>
	90,000
Work-in-process inventory destroyed by fire.....	<u>\$ 55,000</u>

B. Computation of expected recovery:

(1) Effect of co-insurance clauses—building, machinery, and equipment:

Insurable value:

	<i>Machinery and Equipment</i>	<i>Total</i>
	<i>Building</i>	
Replacement cost new.....	\$ 80,000	\$ 37,500
Per cent destroyed assets were depreciated.....	<u>62.5%</u>	<u>33.3%</u>
Replacement cost—net of equivalent allowance for depreciation.....	<u>\$ 30,000</u>	<u>\$ 25,000</u>
Amount of insurance carried.....		<u>65,000</u>

Insurable value is defined as the cost to replace new, less depreciation. Consequently, the insurable value is \$55,000 and not \$75,000. Since the total coverage exceeds the insurable value, recovery in the amount of \$55,000 can be expected. (The expected recovery would not be changed if the insurable value were \$75,000 since an 80% co-insurance clause would be satisfied by coverage of \$60,000.)

(2) Effect of co-insurance clauses—*inventories*:

Operating inventories, May 31, 1960, before fire.....	\$145,000
Supplies inventory, May 31, 1960.....	5,000
Total inventories.....	\$150,000

80% of total inventories.....

Amount of insurance carried.....

Since the insurance carried is less than that required by the co-insurance clauses, the insurance companies are liable for only 108/120ths of the loss sustained, or \$49,500.

(3) Summary of expected recovery:

	<i>Building, Machinery and Equipment</i>		<i>Inventory</i>		
	<i>Pro Rata Portion of Coverage</i>	<i>Expected Recovery</i>	<i>Pro Rata Portion of Coverage</i>	<i>Expected Recovery</i>	<i>Total</i>
Company A.....	30/65	\$25,385	38/108	\$17,416	\$ 42,801
Company B.....	20/65	16,923	35/108	16,042	32,965
Company C.....	15/65	12,692	35/108	16,042	28,734
Total.....		\$55,000		\$49,500	\$104,500



EXAMINATION IN AUDITING

WALTER B. MEIGS

THE auditing section of the May 1961 Uniform C.P.A. Examination was given May 18, 1961 from 8:30 to 12:00 noon and consisted of eight questions—all required. The suggested time allotments were as follows:

	Estimated Minutes	
	Minimum	Maximum
No. 1.....	15	20
No. 2.....	30	35
No. 3.....	15	20
No. 4.....	20	25
No. 5.....	20	25
No. 6.....	20	30
No. 7.....	20	30
No. 8.....	15	25
Total for examination.....	155	210

Number 1 (estimated time—15 to 20 minutes)

You are making an examination of the accounts of the Hardy Corporation. Accounts receivable represent a significant proportion of the total assets of the company. At the beginning of the audit you mailed out positive confirmations on a test basis. Included in your test were confirmations requested from several United States Government departments; the confirmation requests for these accounts were returned along with the following notation:

Your confirmation letter is returned herewith without action inasmuch as the type of information requested therein cannot be compiled by this office with sufficient accuracy to be of any value.

Your test also included customers whose accounts payable systems were either decentralized or a voucher system which made it impossible or impractical to give the requested information. These customers either informed you of their inability to comply with the request or did not reply.

Required:

- a. Assuming the number and amount of responses to confirmation requests are unsatisfactory, what additional auditing procedures would you apply?
- b. If satisfaction is obtained by these procedures, what effect, if any, would your difficulties with the examination of receivables have on your report?

Answer 1

a. The auditor would anticipate that confirmation replies would not be forthcoming with respect to receivables from departments of the United States Government, and would therefore plan his audit work on receivables to compensate for this shortcoming.

The purpose of a confirmation request is to supply objective evidence that the receivables on the client's books are genuine, and are accurate in amount. When this assurance cannot be gained through confirmation from the debtors, the auditor may be able to satisfy himself as to the validity of the receivables and the adequacy of internal control by placing more emphasis upon such procedures as the following:

1. Determine whether receivables are collected before completion of the audit. This determination may best be made by the auditor through
 - (a) Controlling incoming cash receipts during his audit; and
 - (b) Verifying deposit of such collections and related entries in cash receipts records and receivables ledger.
2. Examination of documents which substantiate the fact that orders were re-

ceived, goods were shipped, and customers were billed as indicated by the receivables on the books. Reference should be made to sales contracts, purchase orders from customers, shipping records, duplicate sales invoices, and correspondence from customers to establish the authenticity of the receivables. Attention should also be directed to any substantial sales returns subsequent to the balance sheet date.

b. The auditor must disclose in the scope paragraph of his report that the confirmation of receivables was not accomplished, even though he was able to satisfy himself by alternative procedures as to the validity of the receivables. The

receivables by means of other auditing procedures."

No qualification of the opinion paragraph of the audit report is necessary when the auditor has been able to satisfy himself as to the validity of the receivables.

Number 2 (estimated time—30 to 35 minutes)

You have been engaged for the audit of the Y Company for the year ended December 31, 1960. The Y Company is engaged in the wholesale chemical business and makes all sales at 25% over cost.

Shown below are portions of the client's sales and purchases accounts for the calendar year 1960:

Sales

Date	Reference	Amount	Date	Reference	Amount
12/31	Closing entry	\$699,860	Balance forward		\$658,320
			12/27	SI#965	5,195
			12/28	SI#966	19,270
			12/28	SI#967	1,302
			12/31	SI#969	5,841
			12/31	SI#970	7,922
			12/31	SI#971	2,010
		<u>\$699,860</u>			<u>\$699,860</u>

Purchases

Date	Reference	Amount	Date	Reference	Amount
Balance forward		\$360,300	12/31	Closing entry	\$385,346
12/28	RR#1059	3,100			
12/30	RR#1061	8,965			
12/31	RR#1062	4,861			
12/31	RR#1063	8,120			
		<u>\$385,346</u>			<u>\$385,346</u>

RR = Receiving report.

SI = Sales invoice.

scope paragraph might be worded as follows:

. . . "Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances. It was not practicable to confirm by direct correspondence receivables from departments of the United States Government; however, we were able to satisfy ourselves as to these

You observed the physical inventory of goods in the warehouse on December 31, 1960 and were satisfied that it was properly taken.

When performing a sales and purchases cutoff test, you found that at December 31, 1960 the last receiving report which had been used was No. 1063 and that no shipments had been made on any sales invoices with numbers larger than No. 968.

You also obtained the following additional information:

1. Included in the warehouse physical inventory at December 31, 1960 were chemicals which had been purchased and received on receiving report No. 1060 but for which an invoice was not received until 1961. Cost was \$2,183.

2. In the warehouse at December 31, 1960 were goods which had been sold and paid for by the customer but which were not shipped out until 1961. They were all sold on sales invoice No. 965 and were not inventoried.

3. On the evening of December 31, 1960 there were two cars on the Y Company siding:

- a. Car #AR38162 was unloaded on January 2, 1961, and received on receiving report No. 1063. The freight was paid by the vendor.
- b. Car #BAE74123 was loaded and sealed on December 31, 1960, and was switched off the Company's siding on January 2, 1961. The sales price was \$12,700 and the freight was paid by the customer.

This order was sold on sales invoice No. 968.

4. Temporarily stranded at December 31, 1960 on a railroad siding were two cars of chemicals enroute to the Z Pulp and Paper Co. They were sold on sales invoice No. 966 and the terms were F.O.B. destination.

5. En route to the Y Co. on December 31, 1960 was a truckload of material which was received on receiving report No. 1064. The material was shipped F.O.B. destination and freight of \$75 was paid by the Y Co. However, the freight was deducted from the purchase price of \$9.75.

6. Included in the physical inventory were chemicals exposed to rain in transit and deemed unsalable. Their invoice cost was \$1,250 and freight charges of \$350 had been paid on the chemicals.

Required:

- a. Compute the adjustments which should be made to the client's physical inventory at December 31, 1960.
- b. Prepare the auditor's worksheet adjusting entries which are required as of December 31, 1960.

Answer 2

a. *Adjustment to client's physical inventory at December 31, 1960.*

Additions:

(1) Materials in Railroad Car #AR38162 on hand at December 31 but not unloaded and not included in count.....	\$ 8,120
(2) Materials in transit to customer (stranded on railroad siding at December 31). Terms of shipment F.O.B. destination. Sales price \$19,270 + 125% = cost of.....	15,416
	<u><u>\$23,536</u></u>

Total additions to inventory.....

Deductions:

(1) Material cost of damaged goods considered unsalable. (It is assumed that inventory does not include freight charges).....	1,250
	<u><u>\$22,286</u></u>

Net adjustment to inventory.....

b. *Auditor's worksheet adjusting entries at December 31, 1960.*

1. Inventory.....	\$22,286
Income Summary.....	<u><u>\$22,286</u></u>
To increase inventory for adjustments in physical inventory quantities.....	
2. Sales.....	15,773
Accounts Receivable.....	15,773
To exclude from sales Invoices No. 969, No. 970 and No. 971, because goods were still in warehouse and included in inventory on December 31.	

3. Purchases.....	\$ 2,183	
Accounts payable.....		\$ 2,183
To include in inventory goods on hand for which invoice had not been received.		
4. Accounts receivable.....	12,700	
Sales.....		12,700
To record as sales goods loaded and sealed in freight cars December 31. Freight paid by customer.		
5. Sales.....	19,700	
Accounts receivable.....		19,700
To exclude from sales shipment in transit at December 31, terms F.O.B. destination. Sales invoice No. 966.		
6. Claims receivable.....	1,600	
Purchases.....		1,250
Freight in.....		350
To set up claim against carrier for goods damaged in transit and rendered unsalable.		

Number 3 (estimated time—15 to 20 minutes)

You are newly engaged by the James Co., a New England manufacturer with a sales office and warehouse located in a western state. The James Co. audit must be made at the peak of your busy season when you will not have a senior auditor available for travel to the western outlet. Furthermore the James Co. is reluctant to bear the travel expenses of an out-of-town auditor.

Required:

- a. Under what conditions would you, the principal auditor, be willing to accept full responsibility for the work of another auditor?
- b. What would be your requirements with respect to the integrity of the other auditor? To whom would you direct inquiries about the other auditor?
- c. What reference, if any, would you make to the other auditor in your report if you were:
 - (1) Assuming full responsibility for his work?
 - (2) Not assuming responsibility for his work?

Answer 3

- a. It is assumed that the amounts involved at the western outlet are material; if these items were not material there would be no necessity for any audit work

to be performed at this location.

The principal auditor should be willing to accept full responsibility for the work of another auditor under the following conditions:

- 1. The other auditor is selected by the principal auditor after appropriate inquiry and investigation.
- 2. The other auditor is a correspondent firm previously used with satisfactory results by the principal auditor.

If the client acted on his own initiative to retain the other auditor, the principal auditor may not wish to accept responsibility for that phase of the work and should disclose in the audit report the use of other independent accountants for examination of the western outlet.

- b. Rules of professional conduct require that the other auditor be a certified public accountant, and that he be independent with respect to the affairs of the client.

Inquiries concerning the competence and professional reputation of the other auditor might be directed to the AICPA, to the appropriate state society of certified public accountants, to the state board of accountancy, and to bankers and public accounting firms familiar with his work. The other auditor should be asked to supply such references.

- c. (1) No reference to the other auditor need be made in the audit report

if the principal auditor is assuming full responsibility for his work. However, there is no objection to disclosing the reliance upon the other auditor.

- (2) If the principal auditor does not wish to assume responsibility for the work of the other auditor, he should disclose in the scope paragraph of his report the extent of the work performed by the other auditor, and in the opinion paragraph should either qualify his opinion or disclaim an opinion. The choice between a qualified opinion and a disclaimer of opinion would depend upon the materiality of the items examined by the other auditor.

Number 4 (estimated time—20 to 25 minutes)

The Generous Loan Company has 100 branch loan offices. Each office has a manager and four or five subordinates who are employed by the manager. Branch managers prepare the weekly payroll, including their own salaries, and pay employees from cash on hand. The employee signs the payroll sheet signifying receipt of his salary. Hours worked by hourly personnel are inserted in the payroll sheet from time cards prepared by the employees and approved by the manager.

The weekly payroll sheets are sent to the home office along with other accounting statements and reports. The home office compiles employee earnings records and prepares all federal and state salary reports from the weekly payroll sheets.

Salaries are established by home office job-evaluation schedules. Salary adjustments, promotions and transfers of full-time employees are approved by a home office salary committee based upon the recommendations of branch managers and area supervisors. Branch managers advise

the salary committee of new full-time employees and terminations. Part-time and temporary employees are hired without referral to the salary committee.

Required:

- a. Based upon your review of the payroll system, how might funds for payroll be diverted?
- b. Prepare a payroll audit program to be used in the home office to audit the branch office payrolls of the Generous Loan Company.

Answer 4

a. Internal control over payrolls is unsatisfactory because of the concentration of duties in the hands of the branch manager. Among the various methods by which payroll funds might be diverted are the following:

- a. 1. Terminated employees might be carried on the payroll for some time before reporting the terminations to the home office.
2. The payroll might be padded through use of fictitious names represented to be temporary or part-time employees.
3. The branch manager might report fictitious names for new full-time employees and show such employees as terminated prior to a visit by a supervisor.
4. The time cards prepared by the employees might be altered by the manager to show increased hours.
5. The manager in collusion with one or more employees might submit exaggerated records of hours worked.
6. The payroll sheets prepared by the manager might exceed the hours shown by the time cards.
7. The manager might not report

- unauthorized absences on his own part.
8. Salary increases approved by the home office might not be paid to employees.
 9. Unclaimed wages might be abstracted.
 - b. 1. Compare the payroll costs of various offices with the payroll for prior periods.
 2. Compute the percentage relationship between payroll in selected offices and volume of loans in such offices.
 3. Compare payroll costs in various offices.
 4. Determine which offices reported high turnover of personnel and make detailed tests of records for such offices.
 5. Discuss unusual amount of turnover and unusual relationships of payroll cost to volume of business with members of salary committee and if possible with area supervisors.
 6. For selected offices, scan payroll sheets for alterations, foot payrolls, and trace salaries to home office approval forms.
 7. Compare signatures on payroll sheets with those on personnel application forms and, in questionable cases, with handwriting of branch manager.
 8. Trace names on payroll sheets to social security reports.
 9. Compare starting dates, salary change dates, and termination dates per payroll sheets with actions of salary committee.
 10. Compare names of terminated employees with state unemployment compensation reports.
 11. Trace earnings and deductions to individual payroll records and to financial statements of branch offices.
- 12. Make surprise observation of pay distribution in selected offices.**
- Number 5 (estimated time—20 to 25 minutes)*
- When you arrive at your client's office on January 11, 1961 to begin the December 31, 1960 audit, you discover the client had been drawing checks as creditors' invoices became due but not necessarily mailing them. Because of a working capital shortage some checks may have been held for two or three weeks.
- The client informs you that unmailed checks totaling \$27,600 were on hand at December 31, 1960. He states these December-dated checks had been entered in the cash disbursements book and charged to the respective creditors' accounts in December because the checks were pre-numbered. Heavy collections permitted him to mail the checks before your arrival.
- The client wants to adjust the cash balance and accounts payable at December 31 by \$27,600 because the cash account had a credit balance. He objects to submitting to his bank your audit report showing an overdraft of cash.
- Required:**
- a. Submit a detailed audit program indicating the procedures you would use to satisfy yourself of the accuracy of the cash balance on the client's statements.
 - b. Discuss the propriety of reversing the indicated amount of outstanding checks.
- Answer 5**
- a. The audit procedures in this engagement should be designed to determine whether there were undistributed checks of \$27,600 on hand at December 31 as stated by the client; in addition, the audit procedures should accomplish the usual objectives of cash verification.

1. Confirm the bank balance at December 31.
2. Obtain a cut off bank statement directly from the bank covering the first two weeks of January.
3. Request the client to prepare a list of the undistributed checks at December 31, including serial numbers, dates, payees, and dates mailed.
4. Prepare a bank reconciliation at December 31 or review the reconciliation prepared by the client.
5. Prepare a second bank reconciliation two weeks after the balance sheet date.
6. Compare the paid checks returned by the bank with the client's list of undistributed checks. Note the date of deposit and date charged to client's account. From this study of dates, determine whether the checks in question were released on or before December 31.
7. To the extent that the checks stated by the client to have been undistributed at December 31 are proved to have been on hand at that date, a reversing entry should be made to restore such amounts to cash and to accounts payable.

b. The propriety of reversing the indicated amount of outstanding checks has nothing to do with the question of a bank overdraft. The financial statements should disclose the correct figure for cash at December 31; if an overdraft existed, it should be shown.

The writing of checks which are held rather than being mailed does not effect a reduction in cash. Until the checks are released, the funds are still under management's control and could be used for other purposes. Entries to reduce cash and accounts payable without actual payment

taking place create a misleading financial statement with an overstated current ratio. The reversing entry discussed is intended to eliminate such "window-dressing."

Number 6 (estimated time—20 to 30 minutes)

Jiffy Clerical Services is a corporation which furnishes temporary office help to its customers. Billings are rendered monthly based on predetermined hourly rates. You have examined the company's financial statements for several years. Following is an abbreviated statement of assets and liabilities on the cash basis as of December 31, 1960.

Assets

Cash.....	\$20,000
Advances to employees.....	1,000
Equipment and autos, less allowance for depreciation.....	25,000
Total assets.....	<u>46,000</u>

Liabilities

Employees' income taxes withheld.....	8,000
Bank loan payable.....	10,000
Estimated federal income taxes on cash basis profits.....	10,000
Total liabilities.....	<u>28,000</u>
Net assets.....	<u><u>\$18,000</u></u>

Represented by:

Common stock.....	\$ 3,000
Cash profits retained in the business.....	15,000
	<u><u>\$18,000</u></u>

Unrecorded receivables were \$55,000 and payables were \$30,000.

Required:

- a. Prepare the opinion you would issue covering the statement of assets and liabilities as of December 31, 1960, as summarized above, and the related statement of cash income and expenses for the year ended that date.
- b. Briefly discuss and justify your modifications of the conventional opinion on accrual basis statements.

Answer 6

a. Auditor's opinion

We have examined the Statement of Assets, Liabilities and Capital (prepared on a cash basis and adjusted to reflect liability for federal income taxes) of Jiffy Clerical Services as of December 31, 1960 and the Statement of Cash Receipts and Disbursements (adjusted to reflect provision for federal income taxes on cash basis profits) for the year then ended. Our examination was made in accordance with generally accepted auditing standards and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

Because the statements have been prepared on a cash basis, they do not include accounts receivable of \$55,000 and accounts payable of \$30,000. In view of the materiality of the omitted assets and liabilities, the statements in our opinion do not purport to show the financial position or operating results as do statements prepared on the accrual basis in accordance with generally accepted accounting principles.

In our opinion the accompanying financial statements summarize fairly the assets and liabilities as of December 31, 1960 arising from cash transactions, and the revenues collected and expenses paid for the year then ended, adjusted to reflect the provision for federal income taxes for the current year on a basis consistent with that of the preceding year.

b. In the scope paragraph, care is taken to avoid such terms as balance sheet, and income statement because statements prepared on the cash basis do not present financial position or operating results. The statements are carefully identified with descriptive titles indicating their limitations.

The middle paragraph of the report was especially designed to disclose the

omission of the very material items of accounts receivable and accounts payable. These omissions require a clear statement by the auditor that the statements do not present fairly either financial position or operating results, because they are not prepared in accordance with generally accepted accounting principles.

The final paragraph indicates that the statements do present fairly what they purport to present. The auditor's opinion attached to cash basis statements may serve a useful purpose but it is imperative that the opinion indicate clearly the serious limitations of the statements and the departure from generally accepted accounting principles.

Number 7 (estimated time—20 to 30 minutes)

In your audit of the Longmont Company you prepared a schedule of notes receivable. This company, a manufacturer, does not have many notes receivable and therefore does not keep a note register. All notes have resulted from sales to customers. The following schedule was prepared:

<i>Column Number</i>	<i>Column Heading</i>
1	Name of maker
2	Names of endorsers
3	Date of note
4	Due date
5	Principal
6	Interest rate
	Discounted (To the bank)
7	Date
8	Rate
9	Amount of discount
10	Interest Collected
11	Accrued
12	Prepaid
13	Payment on principal
14	Balance due
15	Collateral held

Required:

Draw a line down the middle of a lined sheet(s) of paper.

a. On the left of the line state the specific source(s) of information to be entered in each column and, where required,

how data of previous columns are combined.

b. On the right of the line state the principal way(s) that such information would be verified.

which you are auditing for the first time. Consideration should be given the status of (a) the liability for prior years and (b) the liability arising from the current year's income.

Answer 7

Column Number	Source	Verification
1	Note receivable.	Positive form of confirmation. Trace origin of note to entry in general journal, to control account, and to customer's account. If note originated in prior year or was renewed, trace to prior year's audit working papers.
2	Note receivable.	Inspection of note. Trace to ledger account with customer.
3	Note receivable.	Comparison with note. Comparison with date of entry.
4	Note receivable.	Inspection of note. Positive form of confirmation. Entry or collection if note has matured.
5	Note receivable.	Inspection of note. Positive form of confirmation. Entry journal and ledger.
6	Note receivable.	Inspection of note. Positive form of confirmation.
7	Note receivable account.	Trace to cash receipts book. Positive form of confirmation from bank.
8	Correspondence with bank or memorandum supporting credit on bank statement.	Trace to cash receipts book. Positive form of confirmation from bank.
9	Memorandum supporting credit on bank statement.	Independent computation by auditor. Compare amount with entry in cash receipts book and interest expense account.
10	Interest Earned account.	Trace to cash receipts book and to notation on note.
11	Computed from data in columns 3, 5, 6, and 10.	Independent computation by auditor. Compare computed amount with adjusting journal entries and ledger account.
12	Note. Interest Earned or Prepaid Interest accounts.	Inspection of note. Trace to cash receipts book and to Interest Earned account. Trace to adjusting entry if any.
13	Note receivable.	Inspection of notation on note. Positive form of confirmation. Trace to cash receipts book.
14	Computed from data in Columns 5 and 13.	Trace to ledger account for notes receivable. Positive form of confirmation.
15	Client's memorandum record of collateral, representation by management.	Inspection of note. Positive form of confirmation.

Number 8 (estimated time—15 to 25 minutes)

Describe the audit steps that would generally be followed in establishing the propriety of the recorded liability for federal income taxes of an established corporation

Answer 8

a. Determining status of liability for federal income taxes of prior years:

1. Determine which prior years are open for possible additional assessments.

2. Review tax returns and correspondence with tax authorities concerning years still open to adjustment, to determine possibility of additional liability.
3. Review the nature of any disputes or additional assessments in prior years to determine whether challenged items require recognition as liabilities or should be disclosed by notes to the financial statements.
4. Review reports by revenue agents for all recent years. Determine whether issues challenged in prior years have bearing on current year's taxable income.
5. Review the reconciliation of net income per books with taxable income for each year still open to adjustment.
6. Review any claims for refund of prior years' taxes and determine their proper presentation in the financial statements.
 - b. Determining propriety of tax liability arising from the current year's income.
1. Prepare reconciliation of net income per books with taxable income shown in current year's tax return.
2. Compare reconciliation between book income and taxable income for current year with reconciliations prepared in prior years.
3. Determine whether computation of taxable income for current year takes into account all adjustments determined to be necessary in prior years.
4. Review operating losses and/or capital losses for the preceding five years and determine applicability of such losses against current year's taxable income.
5. Ascertain whether declaration of estimated tax has been made and related payments made.
6. Review client's computation of federal income tax for current year.
7. Consider opportunities for tax savings available to client relating to elections as to depreciation, inventory valuation, consolidation, etc.
8. Consider desirability of allocation of income taxes if taxable income differs materially from income per books.

EDITOR'S NOTE

This section of THE ACCOUNTING REVIEW is designed to bring more information about the Association and its activities to the general membership. Any thoughts or suggestions you may have or any news items for subsequent issues should be forwarded to R. K. Mautz, 218 David Kinley Hall, University of Illinois, Urbana, Illinois.

AAA FELLOWSHIPS ANNOUNCED

The Committee on Fellowship Program is pleased to announce that nine fellowships of \$1,000 each have been awarded for the academic year 1961-1962. The purpose of these awards is to assist teachers of accounting to complete their doctoral studies.

The recipients and their present affiliations are:

Wayne R. Chapin—Los Angeles State College
Gerald L. Cleveland—University of Washington
Willard H. Galliart—University of Illinois
Virginia R. Huntington—University of Texas
Homer J. Mottice—Kent State University
Andrew T. Nelson—Michigan State University
Robert H. Raymond—University of Nebraska
Arthur A. Schulte—University of Oregon
David O. Jenkins—University of Southern California

SOUTHWESTERN GROUP MEETING

The Southwestern Region of the American Accounting Association met in joint session with the Accounting Section of the Southwestern Social Science Association at the Statler-Hilton Hotel, Dallas, Texas, on March 31 and April 1, 1961.

Nolan E. Williams (U. of Arkansas) presided at the Friday morning session. Glenn Welsch (U. of Texas) opened the meeting with a paper on "Managerial Accounting in the Business Curriculum." A discussion of Dr. Welsch's paper was led by Howard Daniels (U. of Houston). This was followed by a session devoted to the general topic of "Post-Collegiate Education in Accounting" which included a paper by Homer Luther (Phillips, Sheffield, Hopson, Lewis and Luther, Houston), titled "The AICPA's Continuing Education Program," and a paper by

Frank P. Smith (Lybrand, Ross Bros., & Montgomery) on "The Training Program of the National Accounting Firm." The Friday morning session was completed with a panel discussion on teaching federal taxes. Participants in the panel were Edward Carmody (Haskins & Sells), C. Aubrey Smith (U. of Texas), and Sam Chisholm (Texas Technological College).

Ralph Russell (Texas College of Arts and Industries) presided over the Friday afternoon meeting. Ben Carson (U.C.L.A.), President of the American Accounting Association, opened the session with a report on activities of the AAA. His remarks were followed by a panel discussion on "Recent Developments in Curricula of Business Schools in the Southwest." Paul Graber (U. of Tulsa) served as discussion leader for the panel which

included Dean John A. White (U. of Texas), Dean O. J. Curry (North Texas State College), Robert Van Voorhis (Louisiana State U.), and Don Childress (U. of Oklahoma). This panel was followed by a discussion session open to questions and remarks from the floor led by Wilton Anderson (Oklahoma State U.) and Robert Van Voorhis. The Friday afternoon session was concluded by a short business meeting.

The Saturday morning program was under the chairmanship of Richard Homburger (U. of Wichita). Lionel Gilly (Producing Properties, Inc., Dallas) dis-

cussed the AICPA's research program. Roderick Holmes (Baylor U.) presented a paper on the relationship between maintenance costs and depreciation policies. A discussion of these two papers was led by I. E. McNeill (U. of Houston). The final portion of the program was a panel discussion on "The Influence of Electronic Data Processing on Accounting Education." Panelists were James C. Cohrs (Peat, Marwick, Mitchell, & Company) and C. Orville Elliott (North Texas State College). Peter Firmin (Tulane U.) served as discussion leader for the panel.

FOURTEENTH ANNUAL ACCOUNTING CONFERENCE AT AGRICULTURAL AND MECHANICAL COLLEGE OF TEXAS

On April 24 and 25, the Agricultural and Mechanical College of Texas was host to its Fourteenth Annual Accounting Conference.

Speakers on technical subjects at the first morning session included Adolph G. Schlossstein (Price Waterhouse & Co.) discussing "You and Your Accountant," and David B. Hertz (Arthur Andersen & Co.) who spoke on "Operations Research for Smaller Companies."

At the afternoon session, Frank Langston (Dallas Times Herald) spoke on "Financial Reporting," and Leo Herbert (United States General Accounting Office) discussed "Professional Accounting and Auditing Developments." These papers were followed by "panel workshop discussions" in which Mr. Langston was assisted by Thomas N. Jenness, Jr. (McCammon, Morris, Pickens & Mayhew) and Joseph Dranguet (Haskins & Sells). Mr. Herbert was assisted by Arch Rounsville (United

States Department of Agriculture) and Wendell F. Barnhart (United States Department of Commerce).

Speaker for the evening banquet was William F. Butler, Vice President, Chase Manhattan Bank, New York. He spoke on "Current Economic Problems."

The third technical session included a paper by Arthur M. Cannon (Standard Insurance Company) on "Accounting Principles and the Accounting Principles Board," a discussion of "Pros and Cons of Financing State Expenditures" by George Lafferty (Cheatham, Brody, Lafferty & Co.), and a talk by Forrest Freitag (Tennessee Gas Transmission Co.) on "Responsibility Accounting in the Oil and Gas Industry."

J. Gordon Peterson spoke on "Are You Using Your Bifocals" at the Tuesday Luncheon session. General chairman for the conference was Robert Zech (Arthur Andersen & Co.).

MICHIGAN ACCOUNTING EDUCATORS CONFERENCE

The 1961 Michigan College Accounting Educators' Conference was held at Ferris Institute, Big Rapids, Michigan on May 6. Three technical sessions were included.

Stuart B. Mead (Michigan State U.) served as Chairman of the first session on "Improvement of Instruction in the First Year Accounting Course." Participants were Frederick Broemer (Ferris Institute), John Lotz (Eastern Michigan U.), and John W. McAuliffe (U. of Detroit).

"Accounting Concepts for Management" was the subject of the second session which had Gardner Jones (Michigan State U.) as chairman and as participants, Charles Knutson (General Motors Insti-

tute), Harry Landis (Alma College), and James Wallis (Wayne State U.).

Ardwin J. Dolio, Vice-President of Ferris Institute, spoke on "An Accounting Program Through the Eyes of a College Vice-President of Instruction" at the noon luncheon.

The final session was directed toward consideration of the Michigan C. of E. examinations. James C. Finney, Vice Chairman, Michigan State Board of Accountancy, and Herbert E. Miller (U. of Michigan) discussed changes in the examinations. John J. Spinetto (Seidman & Seidman) was chairman.

FGAA HOLDS CONFERENCE

"Changing Dimensions of Financial Management" was the central theme of a three-day conference held May 18, 19, and 20 at the Hotel Shoreham in Washington, D. C., by the Federal Government Ac-

countants Association. Top financial administrators of the federal government discussed such subjects as managerial auditing, statistical sampling, and improved equipment.

AMERICAN ACCOUNTING ASSOCIATION*1961 Convention***August 28, 29, and 30**

on the campus of
THE UNIVERSITY OF TEXAS
AUSTIN, TEXAS

PRESIDENT'S INVITATION

On behalf of the Executive Committee, I am pleased to invite all of the members of the American Accounting Association to attend its 1961 annual convention. All of the ingredients for a successful meeting are present—stimulating technical and professional sessions, an entertaining social agenda, and an attractive and comfortable setting.

The technical program includes speakers prominent in government, public accounting, industry, education, and research. A variety of social events for members and their families is being provided. The campus of the University of Texas has excellent, air-conditioned meeting, housing, and dining facilities.

The Arrangements Committee has been working for months to perfect plans that promise the maximum in comfort, convenience, and hospitality. We are going to have an excellent meeting at Austin. I hope to see you there.

Sincerely,

A. B. CARSON, President
American Accounting Association

AMERICAN ACCOUNTING ASSOCIATION

Program for the 1961 Annual Convention

MONDAY, AUGUST 28

- 9:00- 5:00 Registration
Committee Meetings
6:00 Buffet Dinner

TUESDAY, AUGUST 29

9:15-11:45 Plenary Session

Presiding: CHARLES W. BASTABLE, Columbia University, Vice President, American Accounting Association

Accounting Innovation and the Psychology of Change

GARDNER M. JONES, Michigan State University

Principles of Divisional Income Determination

GORDON SHILLINGLAW, Columbia University

New Directions in Tax Administration

MORTIMER M. CAPLIN, Commissioner of Internal Revenue, United States Treasury Department

12:00- 2:00 Luncheon

Welcome: A. B. CARSON, University of California, Los Angeles, President, American Accounting Association

Presiding: FRANK S. KAULBACK, JR., University of Virginia, Vice President, American Accounting Association

Greetings: HARRY H. RANSOM, Chancellor, The University of Texas

Address: Human Relations as a Modern Tonic
LOUIS H. PILIÉ, President, American Institute of Certified Public Accountants

2:15- 3:15 Plenary Session

Presiding: DONALD J. BEVIS, Touche, Ross, Bailey & Smart, Vice President, American Accounting Association

Address: Business Information Systems

GERALD L. PHILIPPE, Comptroller, General Electric Company

3:30- 4:45 Round Tables

1. *The Case Method in Accounting Instruction*

Chairmen: WILTON T. ANDERSON, Oklahoma State University

T. LEROY MARTIN, Northwestern University

2. *The Role of the American Accounting Association in Accounting Research*

Chairman: SAMUEL R. HEPWORTH, University of Michigan, Director of Research, American Accounting Association

Panel: WILBER C. HASEMAN, University of Missouri

WILLIAM J. VATTER, University of California, Berkeley

3. *Income Tax Instruction*

Chairmen: PAUL F. ICERMAN, University of Michigan

DONALD SKADDEN, University of Illinois

4. *Attracting Young People to the Accounting Profession*

Chairmen: RICHARD CLAIRE, Arthur Andersen & Company, Chicago

ROBERT L. DICKENS, Duke University

5. *The First Year Course in Accounting*

Chairmen: JAY D. COOK, Washington and Lee University

GILBERT P. MAYNARD, University of Iowa

WEDNESDAY, AUGUST 30

9:15-11:45 Plenary Session

Presiding: NORTON M. BEDFORD, University of Illinois, Vice President, American Accounting Association

A Critique of Standard Costs

DAVID SOLOMONS, University of Pennsylvania

Accounting Data for Purposes of Control

ROBERT K. JAEDICKE, Stanford University

The Decline of the Income Concept—Why?

MAURICE MOONITZ, Director of Accounting Research, American Institute of Certified Public Accountants

12:00- 2:00 Luncheon and Business Meeting

Presiding: A. B. CARSON, President

Report of the Secretary-Treasurer, PAUL H. WALGENBACH, University of Wisconsin

Report of the Director of Research, SAMUEL R. HEPWORTH, University of Michigan

Report of the Editor, ROBERT K. MAUTZ, University of Illinois

Report of the President

Election of 1962 Officers

2:15- 4:00 Round Tables

6. *The Accounting Curriculum*

Chairmen: PAUL E. FERTIG, Ohio State University

JOHN H. MYERS, Northwestern University

7. *The Need for Professional Schools of Accounting*

Chairmen: THOMAS D. FLYNN, Arthur Young & Company

WALTER G. KELL, Syracuse University

8. *Teaching Methods—New Developments*

Chairmen: RAE D. ANDERSON, Bentley College of Accounting and Finance

DENNIS GORDON, University of Akron

9. *Recent Doctoral Dissertations*

Presiding: WAYNE E. SHROYER, University of Denver

10. *The CPA Examination: Time for a Change?*

Chairmen: CHARLES T. HORNGREN, University of Chicago

RALPH S. JOHNS, Haskins & Sells, Chicago

6:00- 6:45 Reception

7:00- 9:00 Banquet

Presiding: A. B. CARSON, President

9:30-12:00 Dance

ASSOCIATION NOTES

(EDITOR'S NOTE: Please address communications concerning Association Notes to the editor of THE ACCOUNTING REVIEW, 218 David Kinley Hall, Urbana, Illinois.)

CALIFORNIA

Los Angeles State College

Mary E. Murphy has been promoted to Professor. Ramon Jose de Reyna has resigned to enter public accounting.

Eta of California Chapter of Beta Gamma Sigma was installed at Los Angeles State College on March 4, 1961, when eleven undergraduates, three graduate students, and one faculty member were initiated. Mary E. Murphy is serving as Chapter President.

INDIANA

Indiana University

James M. Fremgen has accepted a position as Assistant Professor at the University of Notre Dame and Ray H. McClary will join the staff of Ohio University as an Assistant Professor, both in September, 1961.

KENTUCKY

Bellarmine College

On February 24 Mr. Louis H. Pilie, president of the AICPA, presented a paper before the faculty and students of the accounting department on the subject "The Glowing Future of the Accounting Profession."

MICHIGAN

Michigan State University

Herbert E. Miller has been appointed a Professor in the Graduate School of Business Administration.

University of Michigan

R. Lee Brummet has been promoted to Professor and is currently serving as Chairman of the School of Business Administra-

tion's Committee for the Dearborn Center of the University of Michigan. The Dearborn Center opened in the fall of 1959, enrolling students in a cooperative program involving business internships and leading to the Bachelor of Business Administration degree.

James Bulloch has been added to the staff as Lecturer. Robert H. Mills recently completed work for the Ph.D. at the University of Wisconsin and has joined the staff as an Assistant Professor. Arthur L. Thomas has joined the staff as an Instructor while working on a Ph.D. degree.

Samuel R. Hepworth is serving on the Governor's Advisory Commission on Accounting and Reporting. Paul F. Icerman is currently a Director of the Michigan Association of CPAs. W. A. Paton is teaching economics at Olivet College this year.

Herbert E. Miller has resigned to join the staff at Michigan State University.

MINNESOTA

University of Minnesota

Chris Luneski will join the staff of the University of Oregon in September as an Assistant Professor.

NEW YORK

The City College of New York

Professor John Jaffe retired in June after serving the college since September, 1930.

Syracuse University

Walter G. Kell has been appointed to the New York State Council on Accountancy. Horace J. Landry served as Chairman of the Ninth Annual Central New York Tax Conference.

NORTH CAROLINA

Duke University

Professor Martin L. Black, Jr. will be on leave for the year 1961-62 with a Fulbright grant to lecture at the University of Yokohama.

OHIO

Bowling Green State University

Mr. Richard Neumann, a candidate for the Ph.D. degree at Michigan State University, and Mr. Rogers Gerhardt, formerly with Arthur Andersen & Co., will join the faculty in September.

Harvey Donly will participate in the University of Chicago Seminar at Williamstown, Massachusetts during the summer and Werner Frank will attend the Seminar on Electronics at Carnegie Institute of Technology. E. C. Bomeli served as a seminar leader to the International Conference of the Institute of Internal Auditors at Montreal, Canada in May.

Ohio University

Ray H. McClary has joined the staff as an Assistant Professor. Warren H. Reininga is serving as Chairman of the Accounting Department effective February 1, 1961.

The Ohio State University

R. Carson Cox has resigned to accept the position of Director of Personnel with Alexander Grant & Co. in Chicago.

R. Gene Brown, Donald F. Pabst, and Dee L. Kleespie have resigned as Instructors to accept positions as Assistant Professors at Harvard, University of Cincinnati, and University of Southern Calif-

fornia, respectively. Robert E. Malcolm has resigned as an Instructor to accept a position with Lybrand, Ross Bros. & Montgomery in Columbus.

Paul E. Fertig is on leave during the summer to serve as a consultant to the Ohio Oil Company.

Xavier University

George C. Selzer, Chairman of the Department of Accounting, has been promoted to Associate Professor.

OREGON

University of Oregon

Dale Harwood will attend the Ford Foundation Faculty Seminar on New Developments in Business Administration this summer at Williamstown, Massachusetts. Chris Luneski will join the staff as a lecturer in September, 1961.

In September 1961, a five-year program leading to an MBA degree will accept students preparing for a professional accounting career. A number of accounting courses formerly offered at the undergraduate level will be offered only at the graduate level. The total five-year program calls for increased preparation in mathematics and quantitative analysis, and a broader background in liberal arts than was formerly required in the four-year accounting major curriculum.

TEXAS

University of Houston

Milton F. Usry, Jr. resigned as Assistant Professor to pursue work toward a doctorate at the University of Texas. Paul W. Lindloff, Jr., has rejoined the accounting department as an Associate Professor.

Contributions to Association Notes are welcomed from any school at any time. Schools which have contributed in the past are circulated on a regular basis once a year for information of interest to members of the AAA. If your school has not been invited to submit notes in the past year, please write the editor for inclusion in the mailing list. You need not wait for an invitation to submit information.

A. B.
Raym
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Norto
Donal
Frank
Paul
R. K.
Samue
Charle
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C. R.

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Califor
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Delawar
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Florid
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AMERICAN ACCOUNTING ASSOCIATION COMMITTEES—1961

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South Dakota.....	Walter A. Person.....	Augustana College
Tennessee.....	John B. Ross.....	University of Tennessee
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Michigan (Western).....	R. F. Salmonson.....	Michigan State University
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New York (Buffalo).....	Robert G. Allyn.....	Canisius College
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Oregon.....	Ralph L. Boyd.....	Portland State College
Pennsylvania (Eastern).....	W. A. Howe.....	Temple University
Pennsylvania (Western).....	William W. Frasure.....	University of Pittsburgh
Rhode Island.....	Porter W. Wood.....	University of Rhode Island
South Carolina.....	John S. Herin.....	University of South Carolina
South Dakota.....	Harry E. Olson.....	University of South Dakota
Tennessee.....	Warren L. Slagle.....	University of Tennessee
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Texas (Southern).....	Robert E. Seiler.....	University of Texas
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West Virginia.....	Vern H. Vincent.....	West Virginia University
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Wyoming.....	J. F. Messer.....	University of Wyoming

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Charles J. Gaa.....	Michigan State University
Paul Garner.....	University of Alabama
C. R. Niswonger.....	Miami University, Ohio
Frank P. Smith.....	Lybrand, Ross Bros. & Montgomery

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Charles J. Gaa, <i>Chairman</i>	Michigan State University
Martin Black.....	Duke University
C. R. Niswonger.....	Miami University, Ohio
Paul H. Waigenbach.....	University of Wisconsin

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Jim G. Ashburne	Mrs. Jim G. Ashburne
Walter G. Austin, Jr.	Mrs. Walter G. Austin, Jr.
Ben B. Barr	Mrs. Ben B. Barr
Earl D. Bennett	Mrs. Earl D. Bennett
C. Taylor Gandy	Mrs. C. Taylor Gandy
Frank D. Graydon	Mrs. Frank D. Graydon
Robert L. Grinaker	Mrs. Robert L. Grinaker
William N. Hoffman, Jr.	Mrs. William N. Hoffman, Jr.
Thomas N. Humble	Mrs. Thomas N. Humble
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George H. Newlove	Mrs. C. Aubrey Smith
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Accounting

AMERICAN INSTITUTE OF CERTIFIED PUBLIC ACCOUNTANTS, Management Services by CPAs, six bulletins to date (New York: American Institute of CPAs, 1959-60, 419 pp., \$3.50 each, \$10.00 for set of first five).

The American Institute of Certified Public Accountants, in its constant effort to keep the C.P.A. abreast of the demands of business, undertook the task of publishing a series of bulletins on the C.P.A.'s role in management services. The information contained in the series is intended for the use of the practicing professional accountant, related primarily to direct his approach towards the management problems of his clients. In no way are these articles intended to serve as a text.

Bulletin #1—The Concept of Management Services by CPAs (19 pp.)

This booklet is based upon an address given by Mr. John L. Carey before the Massachusetts Society of C.P.A.s in November 1958. Emphasis is placed upon the fact that the C.P.A., by his training and experience, is performing a function of management primarily in the area of finance and control. Proper application of the management skills of C.P.A.'s will result in more meaningful audit reports that will prescribe means of improving the financial health or profitability of the client.

Nothing new has been developed by this booklet which will increase the reader's knowledge of management services. The only purpose it serves is to summarize the fundamental functions of the C.P.A. and to alert the profession that one of its areas of responsibility to clients is adequate management services.

Bulletin #2—Budgeting for Profit in Small Business (64 pp.)

Small business suffers greatly due to the lack of a proper understanding of budgets and control. These enterprises feel they cannot adequately use a budget. The C.P.A. should encourage clients to install budgets because the budget leads the way to controls, evaluation of performances, and better planning. The brief review of the principles and development of budgets contained in this booklet is adequate. In addition, two case studies are presented which are most informative. These case studies are easy to follow and contain ample illustrations which should greatly aid the practicing C.P.A. in the area of budgeting.

Bulletin #3—Financing the Small Business (86 pp.)

This booklet concentrates upon the C.P.A.'s role in advising the small business client in the following areas:

1. The determination of financial requirements—preparation of cash forecasts, etc.
2. Methods and sources of financing—short-term funds, intermediate and long-term funds, and permanent funds.
3. Assisting clients in obtaining funds—by preparing adequate reports which can be used by lending institutions as a guide to the financial status of the client.
4. The dynamic financial world—the effect of over-

all national economic changes and their relationship to economic factors at the local level.

This booklet should be rather important to the C.P.A., since it contains many vital points of interest applicable to today's financial problems. The material contained in the five case studies could be easily applied to practitioners' daily problems.

Bulletin #4—Cost Reduction and Cost Control in the Small Business (71 pp.)

Cost reduction and cost control is often a neglected field for the practicing C.P.A. whose major professional effort is that of servicing small business. The bulletin points out the obstacles encountered in setting up a cost reduction program and some methods of combating them. In addition, case studies are presented in the following areas:

1. Analysis of distribution costs and its aid in establishing small and minimum order policies.
2. Analysis of direct product costs and its relationship to pricing and sales policies.

Bulletin #4 is the type of reading matter which should awaken in the C.P.A. the desire to present to the small business an audit report far more meaningful than the regular balance sheet and income statement. The use of break-even charts and comments on cost and pricing policies in reports to small business will serve to increase the value of the C.P.A.'s service to small business.

Bulletin #5—Office Management in the Small Business (84 pp.)

This bulletin shows ways of increasing office productivity by improving organization, systems, procedures, and reports. Three case studies are included in this bulletin covering the following:

1. The installation of a clerical testing program.
2. The collection of decision-making data.
3. The preparation of an employee's handbook and plan for employee orientation.

Although many interesting topics are covered in this bulletin, it is indeed farfetched to believe that a practicing C.P.A. is professionally capable of advising clients in areas of recruitment, interviewing, and testing of potential clerical employees. Many practicing C.P.As could benefit by instituting these sound office procedures in their own office.

Bulletin #6—The Review of the Management Controls of the Small Business (85 pp.)

To attempt to render services to management in areas where specialized knowledge is required can be either a boon or a pitfall to the practicing C.P.A. Caution is advised against rendering advice in areas which cannot be readily supported by accounting data. However it is pointed out that, during the C.P.A.'s normal audit work, management controls are constantly being reviewed, and therefore with only a little additional effort, management "letters" could be released.

This bulletin contains illustrations or questionnaires

used by C.P.A.s for the review of management controls, which should be quite useful to C.P.A.'s desirous of rendering more management services to their clients.

In conclusion, it should be noted that all these bulletins serve as a challenge to the practicing C.P.A. whose clientele consists primarily of small business. If the C.P.A. profession is to grow, it must continually strive to give the best in service. Small business has suffered too long from a lack of competent professional advice in the area of management, and although the reviewer believes a C.P.A. may be qualified to master this area, additional training and experience may be required of some. These bulletins will not make the C.P.A. an expert in management, but they should serve as an excellent source of reference.

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AMERICAN INSTITUTE OF CERTIFIED PUBLIC ACCOUNTANTS, *Accounting Trends and Techniques*, Fourteenth Edition (New York: American Institute of CPAs, 1960, 274 pp., \$18.00).

With each succeeding year as stock ownership broadens, annual reports attract the attention of an ever increasing number of readers. Analysts, stockholders, and potential investors in greater numbers are carefully poring over the financial statements of publicly held companies. The stockholders are becoming more sophisticated and companies in some measure are attempting to make financial statement reporting more meaningful.

This direction, at least, is indicated in the most recent edition of *Accounting Trends and Techniques*. For the past fourteen years, the American Institute of Certified Public Accountants has rendered a significant service to those interested in financial reporting by publishing its study which includes 600 representative companies. The current survey reveals that financial reports are becoming increasingly more informative.

For example, in 1951 30% of the companies indicating long-term lease arrangements gave details, compared with 47% in the 1959 reports. There is also a marked increase in the number of companies who are presenting comparative data. In 1959, 72% of the companies studied presented financial statements of the current year and the prior year side by side, whereas only 48% made similar comparisons in 1950. Happily, too, five or ten year comparisons are becoming more common. Whereas 70% of the 1959 annual reports made such comparisons, in 1950 only 34% followed suit. Pennies also are losing out. Fewer than 5% of the companies covered in the current study included cents in their financial statements. Stock option plans are on the ascendancy. Of the reports surveyed, 70% refer to such plans compared with 42% in the year 1955.

The terminology used in reporting is also improving. Back in 1949, when the Committee on Terminology recommended the term "earned surplus" be replaced, 501 companies used it. By 1959 the group had dwindled to 190. Ten years ago 275 companies used the term "reserve" in connection with "accumulated depreciation." This compares with 124 companies in the most recent report.

This annual study should prove to be most helpful to the users of financial statements, i.e., financial administrators, accountants, students, and teachers. It indicates the accounting profession's campaign for clearer annual reports is making progress. It also points up that much remains to be done.

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DAVID R. ANDERSON AND LEO A. SCHMIDT, *Practical Controllership*, Revised Edition (Homewood, Ill.: Richard D. Irwin, Inc., 1961, pp. xiv, 777, \$8.00).

After reading the revised edition of *Practical Controllership*, I decided that to review it intelligently and make a comparison with the form and content of the original edition I should see what reviewers of the first edition had said. I also decided to talk to teachers who had classroom experience with the previous edition. To my surprise, I found that Professor Leo Schmidt (in July, 1948) had made the review of the original edition for THE ACCOUNTING REVIEW. Much of what was said by Professor Schmidt in his review of the original edition can be said of the revised edition. His statement that "it should be required reading for every teacher and anyone else who really wants to know what accounting and management mean to each other" continues to be a statement with which I am in full accord, even considering that now he is the junior author.

The revised edition retains an abundance of the material contained in the original edition, but recent and more modern concepts have been expressed in the current edition. Those who know Professor Schmidt can see much of his handiwork in the new material. For example, in Chapter 4, "The Controller and the Management Function," the authors say:

"Textbooks and current literature have always been strangely silent on the question of the basic logic lying behind accounting theory. This is not to say that the writings of the authorities are illogical. In many cases the writers undoubtedly were not even aware of the pattern of their own logical processes; in others they simply felt that it was not necessary to call the readers' attention to the basis behind their thinking. In either case, it now becomes a challenge to study the writings of others in the light of systematic logic to discover the bases of reasoning which are applicable and useful in the accounting area."

Undoubtedly, this pattern of thinking comes from that expressed in Schmidt's article on "Practical Uses of the Device of Formal Logic in Accountants' Daily Work" in the November 1949 *Journal of Accountancy* and is applied in this chapter as in most of the other chapters of the book. The authors, over the frame-work of the extensive material originally developed by Anderson in the prior edition, apply logical analysis throughout. This is all to the good, because one of the main criticisms reported to me by users of the previous edition was that it went into too much procedural detail without the necessary reasoning. The detail still remains, but

It is now supported by a background of logic and techniques needed for the decision-making process under conditions found by a controller of a business or governmental organization.

In addition to the consideration of logical analysis, a great deal of material has been added on problem-solving techniques and decision-making criteria, including one full chapter, "The Attack on Specific Problems." This is in addition to the information retained from the prior edition on management and management techniques.

While the original edition of the book appeared to be slanted to practicing controllers, the revised edition appears to have been designed specifically for classroom use. It now becomes one of the good books available to teachers of accounting which bring together accounting practice and management techniques. The revised edition is supplied with a quantity of excellent case material, which should make any teacher happy. Actual situations of many types found in financial management activities are included. In addition, most of the chapters have questions and problems which relate to information and illustrations in the chapters. As a side issue, teachers of accounting theory may be interested in chapter four, the "Controller and the Management Function" as a good reference chapter on the development of principles of accounting. Some unique suggestions on the development of principles of accounting are explained in the chapter as a basis for the authors' future presentation. The authors also reflect some good advice on the need for mature thinking by one who must reason and think through a problem. They say:

"The good teacher should constantly be aware of the tendency of some students to be looking for 'the word' which precludes the necessity of independent reasoning. So-called education which comprises the pouring into the student brain of a finished product is certainly not to be countenanced in our field, if indeed, it is ever useful anywhere."

Practicing accountants should appreciate having this book available. In many respects it is a handbook of financial management procedures concerning such subjects as organization of the controller's department, manufacturing costs, marketing and administrative costs, inventory control, inventory valuation, depreciation policy and methods, and reports to management. The detailed discussion of these subjects makes the book a valuable reference book for many of the practical applications of accounting to the management process. For instance, one of our auditors who was researching a particular problem on inventories asked me for a good reference book. I told him I had just read what he was looking for in this new edition; and, after reading the material, he agreed.

The authors have overlooked very little in the area of accounting application. However, at times they appear opinionated. As an illustration, one of the new chapters is on "Direct Costing." While the inference given is that direct costs should be condemned, they reiterate that "the authors hope that this chapter will not be interpreted as an off-the-cuff-condemnation of direct costs. The far more important purpose of the chapter is to

demonstrate the use of the logical process against the background of a difficult and important controversial area."

Over-all, I would rate the revised edition of *Practical Controllership* an excellent addition to the literature on accounting. It should fill a need for teachers of accounting in bridging the gap between the total management concept and the accounting process. It also should become a valuable reference document for accountants in their day-by-day work.

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JAMES DON EDWARDS, *History of Public Accounting in the United States* (East Lansing: Bureau of Business and Economic Research, Michigan State University, 1960, pp. xiv, 368, \$6.50).

"The antecedents of American public accounting," writes Professor Edwards, "are to be found in Scotland and England." British accountants came to America following early British investments, and, slowly at first, Americans began to enter the field. As commerce and industry in America grew at a constantly accelerating rate, the growth of public accounting kept pace, marked by the efforts of its practitioners to organize, to raise standards of performance, to establish literature and educational facilities, to obtain legal status, and to merit professional recognition. Special impetus was supplied to this growth by income taxes, wars, and the Federal securities acts. Responsibilities and liabilities of the profession began to be defined by such landmarks as the Ultramares, McKesson-Robbins, and other cases, the provisions of the securities acts, and the self-discipline of its own organizations. Recognition, prestige, and respect for the profession have grown; its field has expanded as, for example, in various services to business management, and has been curtailed only with respect to encroachment on the practice of law.

To those who have lived through part of this history there is a nostalgia in it, and the hope that younger men will be interested. One man who has lived intimately through much of it is John L. Carey, Executive Director of the American Institute of Certified Public Accountants. In his foreword to the history Mr. Carey mentions the choices in selection, emphasis, and manner of dealing with various subjects, which any historian must make, and with which others must almost as surely disagree. Basic is the choice Professor Edwards has made to emphasize events rather than techniques. An utterly different history could have been written in terms of defalcations, bankruptcies, suspicion, the emphasis on balance sheets giving way to emphasis on income, and the development of accounting principles and auditing concepts and techniques. Still another might have told the story of the amazingly difficult battle to raise ethical standards over the years. And these are only examples of the possible facets of accounting history. Professor Edwards' book is a history of events selected from published records.

Following a chapter on British antecedents, and one

presenting various definitions of American public accounting, the remainder of the book is divided chronologically into five periods ending respectively in 1895, 1913, 1928, 1949, and the end of the 1950's. This chronological arrangement necessarily cuts across various aspects of the history which carry through the various periods, and gives an impression of discontinuity. For example, the history of professional organizations, which is a coherent story in itself, appears in sections of each of the five historical periods. Similarly the story of legislative policy and recognition, the establishment and development of educational facilities, and the events which gave impetus to demands for professional services, are presented in part in each of the historical divisions of the book. Professor Edwards has made the difficult choice of chopping up the threads of his story in order to weave patterns of the changing times.

It is a rare page in this book that does not contain a reference to the source of the material on it. These notations together with an index and over nineteen pages of closely printed bibliography demonstrate the studious effort that has gone into this history, make it a useful guide to further study, and show the student the road back to sources. The book, however, makes no pretense at literary style. It is more nearly an historian's note book, and in some respects seems almost to be an unedited note book. The change of pace on the few occasions when arguments or opinions are presented comes almost as a shock. While the author's judgment is necessarily reflected in the selection and treatment of facts, he has avoided the temptation of the artist to paint a picture of what he wants his audience to see. At some sacrifice of artistic and easily readable writing, he has provided a chronological record of selected and verifiable events.

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WILLIAM BAKER FLOWERS, *Criteria For Disclosure of Post-Statement Events*, Research Monograph 18 (Austin: Bureau of Business Research, The University of Texas, 1960, pp. xi, 113, \$2.50).

The purpose of this doctoral dissertation is to present some general criteria which will be useful to practicing public accountants for the disclosure of events subsequent to the date of the financial statements. The author traced the development of disclosure during the period 1900 to 1933 by studying published annual reports and listing statements of the New York Stock Exchange and by reviewing pertinent publications. He determined the degree of disclosure of subsequent events at the present time by examining three hundred current annual corporate reports. He determined the opinions and attitudes of public accountants by mailing a questionnaire to three hundred members of the AICPA. As a test of the questionnaire, Professor Flowers interviewed senior accountants in four national accounting firms in New York City and the Chief Accountant of the Securities and Exchange Commission in Washington, D. C.

In Chapter II the author treats the development of standards of disclosure from 1915 to 1930. He points out that the article "Uniform Accounting" published by the Federal Trade Commission and the Federal Reserve Board in 1917 was the first attempt to set standards of disclosure; it applied primarily to statements submitted to banks for credit purposes. The author adds that little of the material in the article was new since it had been discussed previously in the professional textbooks. In 1919 the Committee on Stock List of the New York Stock Exchange added a requirement that newly listed companies publish a statement of condition and an income statement at least once a year. In 1922 the balance sheet of the Crucible Steel Company included a footnote to dividends payable, "Since paid"; this is the first example of disclosure of a subsequent event cited by the author. The American Institute of Accountants played a major role in the revision of "Uniform Accounting" in 1929; this revision included several significant changes in disclosure. The professional literature included articles calling for fully and fairly informative financial statements.

In Chapter III the author summarizes the influence of the American Institute of Accountants, the New York Stock Exchange, the Securities and Exchange Commission, and the American Accounting Association on the development of disclosure in reporting from 1930 to 1945. He concludes that during this period the combined efforts and publications of these organizations "established to a rather exact degree the disclosure of recorded facts of the business on the statement date. Thus, there should be a certain amount of uniformity in the disclosure of these accounts." He points out that the SEC is able to enforce disclosure for listed companies but that for nonlisted companies the accounting profession achieves disclosure by the recognition of its social responsibility and by the adoption of a rigid code of ethics.

In Chapter IV the author describes the current status of the disclosure of subsequent events. He states that the first significant article on post-statement events, which defined the problem and classified the events into three groups, was written by Carman G. Blough in 1947. This and other articles culminated in the publication of Bulletin No. 25 by the American Institute of Accountants in 1954. "The responsibility for the use of certain audit procedures had been established, but what to disclose was still as much in debate as ever." Accordingly, the author examined three hundred annual reports of two hundred corporations. He considered subsequent events to be disclosed only if they were included within the material covered by the auditor's opinion. He concluded that "there was a lack of consistency in the presentation of subsequent events within corporate annual reports . . . due to a lack of criteria for the determination of events to report."

In Chapter V Professor Flowers tells how his questionnaire was designed (it is included in the Appendix) and analyzes the replies. The questionnaire was intended to test the hypothesis "that accountants would consider certain factors or some basic criteria in reaching decisions to disclose post-balance-sheet events." The three factors included were: "Effect on client's competi-

tive position in industry," "Effect on stockholders' interest," and "Determination of net income for accounting periods subsequent to statement date." The questionnaire listed thirty-two post-balance-sheet events; respondents were asked to indicate whether each should be disclosed and which factors were significant in the decision. The "Effect on stockholders' interest" was cited most frequently. The author states "the factors considered in reaching decisions to disclose were not nearly so clear-cut as the decision to disclose or not disclose; however, some events showed a positive relationship to the factors suggested." The author concludes "that enough accountants accepted the idea of factors to verify their validity." A comparison of two events showed that the progression from negotiations to a contractual relationship had a significant influence on the decision to disclose. The author's discussion of the replies is interesting and presented well.

In conclusion the author recommends the following criteria as guides for the disclosure of subsequent events. In the case of events which existed on the statement date but were then unknown to the accountant, disclosure is required if the condition revealed by a subsequent event existed on the statement date and the amount is material. In the case of events which did not exist on the statement date and are subject to dollar measurement, disclosure is required if the amount is material, the event or condition is unusual or nonroutine, the relationship of the subsequent event to specific elements of financial statements is established, and, where applicable, the contracts or negotiations are completed. In the case of events which did not exist on the statement date and are not subject to dollar measurement, the criteria are substantially those just enumerated plus the requirement that the effect is subject to estimation, based on objective data, by an expert other than the auditor.

Professor Flowers is to be complimented on his pioneering work on this important topic. He has performed a significant service for the profession in highlighting standards of disclosure for subsequent events.

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JACK GOLDNER, *Accounting Manual for Export-Import Companies* (Albany, New York: Matthew Bender and Company, Inc.; New York: Thomas Ashwell and Company, Inc., 1960, pp. 49, \$5.00).

This publication deserves consideration from the point of view of its merits as a manual rather than as a book. It is introduced by a number of definitions, the purpose of which is to distinguish five classes of companies in the export trade, the import trade, or both. The manual centers attention on two of these classes, so-called "specialized export-import merchants of commodities," and "general export-import merchants." The author stresses the need for control of costs resulting from the very small gross profit margins (from less than one per cent to one and one-half per cent on some commodity lines) in the export-import business.

In the case of specialized merchants, specific procedures are carefully outlined, down to and including the detailed forms employed. General merchants are covered more briefly. Much of the coverage is under the headings of inventory and cost control. However, the emphasis is upon the clerical activities involved in historical cost data accumulation. Such activities do not in themselves constitute a system of control. The point given greatest stress is the practice of and need for calculating gross profit on each shipment. (The technical features of gross profit determination are interesting and unusual.) In addition, the role of the auditor in vouching costs and revenues is described in some detail.

Appendices include one on the validity of the procedures outlined from the point of view of the auditor's certificate, and another on the practice of deferring revenue on goods shipped and billed until expense estimates become fully verified. A glossary of foreign trade terms and definitions completes the manual. Notably missing is a chart of accounts for the businesses described, although there is presented a pro-forma income statement.

One could wish that the author had confined himself to his original intention to write a paper on particular aspects of export-import accounting. Although, as he points out, the product is longer than a paper, it is not comprehensive enough to be a manual in the usual sense.

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DELMAS D. RAY, *Accounting and Business Fluctuations*, (Gainesville, Florida: University of Florida Press, 1960, pp. xii, \$6.50).

The impact of accounting reported income on business decision is an issue of no little significance to the accounting profession. More particularly, the question of the extent to which a misstatement of accounting income may motivate business decisions which will accentuate business cycle fluctuations represents a social issue of considerable importance. It is to the latter issue that Professor Ray directs his attention though his analysis includes consideration of the first question as well. The object of his study is "to determine whether accounting, as generally practiced, is capable—given certain assumptions—of affecting business decisions relative to investment, dividend policy, wages, and prices in such a way as to accentuate business fluctuations on both the upswing and the downswing, as is rather frequently alleged, and to determine whether the underlying assumptions seem realistic, given the institutional framework within which modern business operates."

For anyone who has any doubts, Professor Ray presents a persuasive case for the view that accounting methodology does not accentuate business fluctuations. Most of the evidence he uses is secondary in that he uses studies of others in developing his analysis. Yet the quality of these sources is excellent and the quantity is substantial. A typical page might include reference to the views of two, three, or four authorities on the particular point under discussion. The bibliography is a list

of 63 books, 18 government publications, 44 bulletins, monographs and reports, 95 articles, 1 newspaper, 1 microfilm, and 2 letters.

The findings of the study are that "while the theory that accounting methodology accentuates business fluctuations by influencing business investment expenditures cannot be completely invalidated, this aspect of accounting methodology as an accentuating factor has been unduly emphasized," and that consumption expenditures—due to dividend policy, wage levels, and pricing resulting from reliance on misstated accounting data—are not significant in accentuating business fluctuations.

In the area of business investment expenditure, Professor Ray finds that "if the income tax structure and technological changes are ignored, then accounting methodology accentuates business fluctuations if it is assumed: (1) businessmen attempt to invest in such a way as to maximize expected profits; (2) past profits as measured by accounting techniques are accepted in lieu of expected profits; and (3) businessmen misinterpret profits as reported by the accountant in such a way that they are inclined to overinvest during the upswing and underinvest during the downswing." Accepting the first assumption, Professor Ray finds reasons to question the last two necessary assumptions. When technological change and income taxes are considered, the evidence that the accounting methodology does not accentuate

variations in business investment expenditure is rather compelling.

In the area of consumption expenditure the findings are that accounting reported profits do not unduly influence dividend policy, that wage changes are not excessively influenced by accounting results so as to accentuate consumption expenditures and that "the thesis that accounting methodology accentuates business fluctuations by influencing price-making decisions cannot, at present, be accepted by the author."

This is a well written small book of eight chapters titled: (I) Introduction, (II) Accountants' Misstatement of Profit As a Reinforcing Factor, (III) Accounting Inventory Valuation and Profit Fluctuation, (IV) Depreciation Policy and Investment Decisions, (V) Some Further Considerations of Business Investment Decisions, (VI) Cyclical Effects of Accounting Methodology on Dividend Policy and on Wages, (VII) Implications of the Use of Accounting Data in Pricing Decisions, and (VIII) Summary of the Principal Findings and Conclusions.

In terms of its findings on a most significant issue to accountants, and also the quality and quantity of the evidence supporting the findings, this book represents a desirable contribution to accounting literature.

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Economics

KENNETH E. BOULDING AND W. ALLEN SPIOVEY, *Linear Programming and the Theory of the Firm* (New York: The Macmillan Company, 1960, pp. vi, 227, \$6.00).

This delightful book represents a symposium of seven essays which arose out of a summer seminar offered at the University of Michigan. Only the first essay is written by Boulding and the second and third by Spivey. These three papers together amount to less than half the book's volume. Further contributions were made by Yuan-Li Wu and Ching-Wen Kwang, Hans H. Jenny, C. Michael White, and Sherrill Cleland. The various essays are well integrated, the overlapping of ideas is reduced to a minimum, and the sequence constitutes a logical order; this helps to fuse the book into what might be called an "organic" entity. The prime purpose of this book is to "open the door to these new developments to numbers of students and professional economists whose mathematical timidity or unsophistication has prevented them from pushing over this not too formidable threshold." As the title indicates, the core of these new developments is regarded to be linear programming in its relation to the theory of the firm. But the peripheral interests of the book reach much further; they afford some insight into the essence of operations research and management science in general.

Chapter 1, "The Present Position of the Theory of the Firm," is an introductory chapter in which Boulding sketches, with the verve and imagination so characteristic of this prolific writer, the development of microeconomics from Cournot, over Edgeworth and Marshall, to Harrod, Joan Robinson, Chamberlin, and finally to

Tintner, Hicks, Hotelling, and the Lutes, revealing the deficiencies of the traditional theory. Boulding emphasizes that the basic model of the theory of the firm is of purely mathematical nature and that "the jump into economics comes with the assumption that the optimum is the equilibrium . . . and with further assumptions about the general shapes of the production and market functions." He castigates the Robinson-Chamberlin theory, calls its "net revenue" concept "a curious quantity of which no accountant or business man ever heard," and he exposes their firms as "creatures without past or future, balance sheet or net worth." He illuminates the controversial question about the object of maximization and concludes that "if the firm is not maximizing profits it must maximize 'utility,' which is simply a more elaborate way of saying that it does what it thinks best."

The criticism is finally crystallized around the information problem; he aptly remarks that "a theory which assumes knowledge of what cannot be known is clearly defective as a guide to actual behavior." This is aimed at the fact that by transgressing from perfect to imperfect competition "we move from a situation where the information required for the making of a rational decision is a simple number such as a price, given by simple observation, to a situation where the information required is a set of functional relationships which are not given by simple observation." Recognizing that marginal analysis provides decision rules only under perfect knowledge, he outlines the three areas that attempt to overcome some of the deficiencies of the traditional

theory: linear programming, game theory, and organization theory.

With regard to the first, Boulding indicates that "although the basic principle behind linear programming and related techniques on the one hand and the marginal analysis is essentially the same, the greater value of the linear techniques lies in the fact that the basic limiting inequalities, as well as the utility or maximand function, may be more accessible to the information system." In reference to game theory he shows that basically here too the problem reduces to simple maximization, that, however, in circumstances where maximization breaks down "there may still be fragments of rational decision-making left" which lead to "some kind of extension of the maximization principle." With respect to organization theory he regards "the firm as an information image process in which information received continually modifies the images of various role occupants, and produces a corresponding information output" that might result in profit maximization or profit "satisficing."

A final section probes into the ethical principles of society and their effect on the behavior of the businessman. "Insofar, however, as we think of the businessman as taking on a political role and reconciling the conflicting interests of customers, labor, stockholders, government, and the larger public we are getting into considerations which lead us a good way beyond the traditional theory of profit maximization." He concludes that "what we are witnessing therefore is not so much a revolution in the theory of the firm as a deepening and broadening."

Chapter 2, "Basic Mathematical Concepts," represents an elementary but pedagogically excellent introduction to that part of modern mathematics that constitutes the natural environment of linear programming. Spivey explains in a succinct way the essentials of set theory: finite sets, infinite countable and uncountable sets; integers, rational numbers, real numbers, complex numbers; operations such as unions and intersections; order relations and functions; equalities and inequalities in two- and n-dimensional spaces; vectors, their additions, inner products and smallest spanning sets; dependence and non-trivial solutions of homogeneous linear equation systems with the aid of column vectors; convex sets and their extreme points; sigma notation and elementary matrix algebra such as matrix addition and multiplication, scalar multiplication, identity matrices, and presentation of non-homogeneous linear equations in matrix formulation.

All this has been concentrated into a space of only 23 pages. Obviously the reader unfamiliar with these concepts will have to digest this chapter at a slow pace and after doing so can, of course, not regard himself an expert in this area. Many important but still elementary topics such as well ordering, group theory, inverse matrices, to list only a few, are not here included. Nevertheless this essay is a master-work in conciseness of presentation, and if the majority of academic accountants would master these less than two dozen pages, our profession could register a definite intellectual advance.

In Chapter 3, "An Introduction to Linear Programming," Spivey demonstrates the maximization of linear

functions over convex sets and thereby applies many of the concepts outlined in the previous chapter to the formulation and solution of linear programming problems. Further concepts such as feasible solution, optimal feasible solution, hyperplane, dual and degeneracy are introduced. The four basic theorems of linear programming are presented together with proofs. In an appendix the author discusses briefly the simplex method.

Chapter 4, "An Analytical and Graphical Comparison of Marginal Analysis and Mathematical Programming in the Theory of the Firm," by Wu and Kwang constitutes the logic center of this book. The authors' attempt—and very successfully, as it seems to us—to relate linear, and even to some extent non-linear programming, to the traditional theory of the firm. The authors discuss seven cases ranging from a single-product firm, with a fixed nonspecialized production factor, to multiple product firms, with n-processes. For most of the cases they present, after some introductory remarks, the graphic solution, then the linear programming formulation, and finally translate the pertinent case into conventional marginal analysis. The latter will greatly facilitate the understanding of the basic assumptions of mathematical programming by accountants and economists who are used to thinking in terms of total, average, and marginal cost and revenue curves. To them the conceptualization of a familiar problem in matrix form, or in the graphic form of a convex set with a net revenue function to be maximized upon it, or in form of a process-ray diagram, constitutes an initial barrier that must not be underrated. The reformulation of mathematical programming problems into marginal and average terms will help to overcome this impediment. Such an approach is not entirely novel (see e.g. Dorfman, Samuelson and Solow: *Linear Programming and Economic Analysis*) but has here extensively been elaborated by Wu and Kwang.

The chapters 5 to 7 are (with the exception of the appendix to Chapter 6) of non-mathematical nature. The main task of Hans H. Jenny's contribution is a general survey of the essence of operations research. This author starts from Boulding's theses about the insufficiency of traditional economics and outlines the way by which normative economics—that is activity analysis on the macro-level and management science on the micro-level—can produce valuable models for the allocation of resources. This essay summarizes essential features of the current literature such as definitions of Operations Research, Ackoff's classification of main areas into allocation problems, inventory problems, replacement and renewal problems, competitive problems or situations of conflict, information-collection or search problems, queuing or waiting-line problems and routing problems; or the listing of various theories that have contributed to O. R.: general systems theory, information theory, inventory theory, linear and dynamic programming, organization theory, probability theory, queuing theory and stochastic processes, replacement and renewal theory, search theory and statistics. Furthermore the author discusses several applications of O. R. and the specific problems encountered in them. Finally, a separate section is devoted to "the search for an optimum" and some of its intricacies and difficulties: criteria, sub-

optimization, initial decisions with regard to a firm's cost structure, synchronization towards an over-all optimum and the smoothing of cyclical fluctuations.

The last two chapters are likewise of purely expository nature and no doubt betray Boulding's influence. White examines the "Multiple Goals in the Theory of the Firm" by starting from an historic-definitional outline of profit and the profit goal (A. Marshall, F. H. Knight, J. F. Weston, and Jean Marchal; surprisingly enough Schumpeter is passed over). A section called Impact of Valuation on Profit deals with problems self-evident to every accountant while the section Time Element in Profit Determination gives a brief exposition of the planning horizon concept without pointing out the crucial fact that by investing in "information" the entrepreneur is in a position to extend this horizon. A further section, The Choice of the Entrepreneurial Goal, as discussed in the contemporary literature (Drucker, Sčitovsky, Enke, Papandreou; Dean remains unmentioned) is summarized and leads to Boulding's thesis of homeostasis and survival of the firm as a goal "taking precedence over all other objectives." Finally various external and internal goals representing "alternatives creating differentials for firms" (market goals, image creation, power goals, production goals, financial goals) are discussed. An appendix offers an original and interesting mathematical (linear programming) formulation of those goals which are within the range of quantification (maximization of sales volume, upper and lower constraints on profit, maximization of the value of assets, and maximization of financial resources).

The book closes with Cleland's "Short Essay on a Managerial Theory of the Firm" which offers many an original idea without, however, setting forth "a finalized model of the managerial firm." The main thesis on which this presentation pivots is found in the assertion that "the pattern of internal decision-making which he [the entrepreneur] followed was designed to minimize the external constraints which had theoretically limited his decision alternatives. . . . To do this the businessman made decisions internally which were designed to change his external environment. The changes that he made in his firm's environment took such forms as the tariff to limit his foreign competitors, collusion to foil the market temporarily, or horizontal merger to foil the market permanently. On the factor market side, he encouraged immigration (at least in the U.S.) to maintain a large supply of labor, he used patents to control the state of technology, and he promoted vertical mergers, to insure his firm a source of supply. What developed was a firm which, although not completely immune from outside market forces, was not totally controlled by them either." Cleland therefore concludes that "knowledge of the market is no longer enough. To understand and predict firm behavior, the economist must go inside the firm and see what lies behind the darkened window."

The author then demonstrates that this leads to a managerial theory incorporating by necessity organization theory, information theory, cybernetics, and institutional material, obviously with the point of gravity on the first. In his view "the managerial firm is not a maximizing firm. It may be a satisfying or minimizing one." He also emphasizes the importance of the control mecha-

nism (in its simple form Boulding's balance sheet model) which will be more often an internal than an external. The author agrees with Margolis that managers "adopt procedures and rules because of the lack of information necessary to be fully 'rational'" and shows this is nothing but a recognition that *information is not costless* (one of the most important, but for a long time neglected, truths on which modern organization theory rests).

In comparing this book with the host of literature on linear programming and operations research that has emerged in recent years, its special character must be borne in mind. The work under review excels in conciseness and through its pedagogic originality. Rarely does a book in this area say so much so well in so limited a space. Hence, it can be highly recommended to all accountants and economists who have not yet pierced the iron curtain of modern mathematics. Many of them will not be able to master the content of this book at a first reading, but with some persistence the effort spent in studying the second, third, and fourth chapter will be highly rewarding to them. For class-room use this book will become an indispensable supplementary reading; its adoption as a text might be feasible for a survey course, but even there the lack of "problem material" will be felt decisively. Finally, for the accountant or economist who has already acquired some familiarity with mathematical approaches, this book will be a valuable source of ideas and suggestions.

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JOHNSTON, J., *Statistical Cost Analysis* (New York: McGraw-Hill Book Company, Inc., 1960, pp. ix, 197, \$6.75).

This concise and interesting book begins with a consideration of various hypotheses from economic theory which relate changes in costs of production to variations in the rate of output and the scale of a firm's operations. The first chapter, which contains an informative survey of the orthodox theory of production in the firm and of the linear programming formulation of production, is followed by a lucid discussion of ways in which these theoretical hypotheses can be placed into forms suitable for empirical testing by the use of statistical techniques and of the statistical problems of estimation and testing that arise when this has been accomplished. The assumptions of least-squares analysis, an important tool in this kind of econometric work, are presented in a clear and simple manner, and the author shows how errors can arise when these assumptions are not satisfied in estimation procedures.

Statistical techniques are then applied to the analysis of costs and output problems in electric power generation in Great Britain, in a large road passenger transport firm operating in the United Kingdom, in a multiple-product food processing firm, in labor productivity and size of establishment in the United States, and in others. Then a resume of the more important empirical research work that has been done in the cost analysis

field during the last twenty-five years is presented and the book concludes with an evaluation of the principal criticisms that have been directed at statistical cost studies (entitled, appropriately enough, "A Critique of the Critics").

Many of the book's features will be of interest to accountants who have had some training in economic theory: the survey of the classical theory of production and of the linear programming statement of production in the firm, the discussion of problems arising in least-squares analysis, the detailed discussion of empirical results (Chapter 4), and the resume of the more important articles and research papers in the field. The book is not a textbook, however, as is pointed out in the editor's introduction (the book is in the McGraw-Hill Economics Handbook Series). It is intended instead to be a reference book for courses in economic theory, business economics, operations research, and accounting. Its use in accounting courses may be somewhat limited because

the author necessarily includes discussions of statistical concepts such as multiple and partial correlation, auto-correlation, and serial correlation which require at least two courses in statistics to follow with an adequate understanding. However, the chapter on empirical results, comprising ninety-one pages and forming the heart of the book, should be of considerable interest even to those accountants who must skip parts of it because their background in statistics is inadequate.

In summary, Professor Johnston has handled a difficult writing assignment well and he has provided a reference book that will be particularly useful to economic theorists, econometricians, and accountants who are interested in the interrelationships between economic theory, accounting, and business practice.

W. ALLEN SPIVEY
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General

A. P. MACFARLANE, Editor, *Proceedings of the Second Conference of the Computing and Data Processing Society of Canada* (Toronto: University of Toronto Press, 1960, pp. vi, 365, \$5.00).

"One of the underlying objectives of the Computing and Data Processing Society of Canada is to sponsor conferences which promote the exchange of ideas, experiences, and information among those actively interested in the applications of computer technology." (p. iii) This volume contains the papers presented at the Society's second national conference at the University of Toronto, June 6 and 7, 1960.

Twenty-nine papers are contained in the *Proceedings*, representing thirty-eight authors, more than half of whom hold business and industrial positions and the remainder of whom are governmental employees and academics. As would be expected in such a proceedings, the range in quality and subject matter is great. Quality is near its low in an inappropriate article (for a computing and data processing conference) entitled "On the Nature of Scientific Evidence," in which the author presents a farrago of concepts from elementary statistics and then degenerates into a discussion of the smoking-cancer controversy in which he concludes "it is quite improper, no matter what the data may seem to indicate, to reach any conclusion to the effect that smoking is a cause of anything." (p. 96) There are also several excellent articles, as the one entitled "The Achilles Heel of Data Processing" dealing with the problem of program maintenance, in which the author makes the sagacious observation: "The programmer, if he can be generalized about as a species, is probably one of the most individualistic creatures alive. If he were left completely to himself, he would produce the most beautiful series of programs without leaving a single record of his activities beyond a running program on magnetic tape and a few hieroglyphics on scraps of paper that at best would give esoteric pleasure only to an archaeologist." (p. 75)

Approximately one-third of the articles are scientific

in nature, dealing with such topics as ship design, solving systems of linear differential equations, analysis of power spectra, and polynomial approximations, and thus would be of limited interest to accountants. Other articles, dealing with programming languages and operations research, should be of greater interest.

One part of the *Proceedings* is a group of five manufacturers' papers presented by representatives of Minneapolis-Honeywell, Remington Rand, Bendix, IBM, and Ferranti-Packard. These articles deal with automatic parallel processing on the Honeywell 800, management simulation, a programming system on the Bendix G-20, random access storage equipment, and character recognition systems. The latter topic, presented by two Ferranti-Packard representatives, is a brief but informative summary of MICR (magnetic ink character recognition), optical scanning, and related character recognition systems.

Promotional materials on the Honeywell 800 stress that up to eight programs may be run simultaneously. This feature is discussed under "Automatic Parallel Processing." Anyone familiar with the internal control processes of the more recent electronic data processing systems will find this a well written paper. Any mystery or aweness as to how the so-called simultaneous processing is accomplished will be rapidly dispelled. Actually, processing instructions are executed one at a time, regardless of the number of programs sharing the computer memory. "Imagine, for the sake of simplicity, a program consisting entirely of additions. Such a program, if running alone, would step along at just over 40,000 three-address additions per second. If two such programs are loaded into the Honeywell 800, each will run at 20,000 additions per second and if eight programs are placed in operation they would each accomplish 5,000 additions per second. In this respect the 800 automatically subdivides itself into as many computers as there are programs applied to it. Whenever a program stops, the others run correspondingly faster." (p. 328)

The simultaneous operation is an overlap of input-output with processing accomplished on the 800 by use of buffers, with a small loss in process time; "the effect of transferring information to magnetic tape is to reduce the computer speed by . . . 4.8 per cent." (p. 329) Simultaneous processing is not a unique capability, and is available in some computers with an even smaller percentage loss in process time.

Accountants who are at all concerned with electronic data processing probably will have a general interest in five of the articles. These are the ones entitled "Effective Data Processing in a Large Organization," "Experience in Implementing a Major Application on an E.D.P. System," the previously quoted "The Achilles Heel of Data Processing," "Programming for Business Systems," and "Computers in Small and Medium Businesses." The first three of these relate the experiences of the authors in installing and working with EDP systems. One of the commendable features of these articles is a frank discussion of the problems encountered and an admission of errors made. For example, "it generally takes longer to complete a job than one initially estimates. . . . We have learned from bitter experience that

you should not commit yourself to deadlines unless you are sure you can meet them." (p. 20-21) "We should have done considerably more punched card purification before converting to magnetic tape." (p. 51) "Certain of the programs became so complex because of lack of foresight in their original planning that it was almost literally impossible to make changes in the programs without generating extraneous and unforeseen problems elsewhere." (p. 52) The fourth article cited above deals with problems of the programming organization and personnel, and discusses several of the newer programming systems now available. The fifth article investigates the potentiality of computers in the smaller firms, one of the conclusions of which is that "a computer has little to offer to the average small-sized company unless its management is of particularly good quality." (p. 320)

With such a broad coverage of computing and data processing topics, and containing several well written and informative articles, the *Proceedings* is a worthwhile addition to one's reference library.

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Management

MELVIN ANSHEN AND GEORGE LELAND BACH, Editors, *Management and Corporations 1965* (New York: McGraw-Hill Book Co., Inc., 1960, 253 pp., \$5.50).

This volume contains the papers and views comprising the subject matter of a symposium held on the occasion of the Tenth Anniversary of the Graduate School of Industrial Administration, Carnegie Institute of Technology.

Seven papers are presented in which are outlined the expectations of the respective authors relative to the role of the corporation and the functions of its managers in the next twenty-five years concerning particular problem areas. The symposium itself was confined to discussions of the viewpoints expressed in the papers, their implications, their interrelationships, and their conflicting aspects. The discussions which took place are perhaps summarized in Part II, "Management and Change," by Melvin Anshen, although the summarization is not represented as a complete and exact reproduction of the discussions held during the two days of meetings.

The participants authoring papers and the respective titles of their works are: Herbert A. Simon—"The Corporation: Will It Be Managed by Machines?" Robert Merton—"The Corporation: Its Coexistence with Men"; A. A. Berle, Jr.—"The Corporation in a Democratic Society"; Friedrich A. Hayek—"The Corporation in a Democratic Society"; David Lilienthal—"Management of the Multinational Corporation"; Barbara Ward—"The Western Corporation and the Underdeveloped Economies"; and Robert M. Hutchins—"The Corporation and Education, Ethics, and Power." Eight other prominent educators, businessmen, and professional people took part in the symposium.

Each of the papers was written prior to the sym-

posium and distributed to the participants before the meetings were held (except for Professor Merton's paper). The interesting feature of the outcome of this approach is the similarity of particular themes and yet the advancement of conflicting views as to how certain trends ought to be met or even curbed.

Considered from Professor Anshen's viewpoint, the central theme characterizing the papers is "the necessity for management and corporations to adapt to major changes in their internal and external environments in the next twenty-five years—and their probable ability to do so effectively."

Considered from this reviewer's position, however, another theme possessing more direct implications for the accounting profession seemed to be reflected in the common recognition by the majority of the participants of the growing tendency of corporations to be characterized by multi-goals, i.e., multi-values, which are being allowed to influence managerial decision-making. The problematic features of this tendency can be briefly indicated by the following: to the extent corporate activities are motivated by the single goal, profit maximization, managers have a clear-cut target, and society has a clear-cut criterion to apply in the evaluation of corporate performance. As the profit maximization motive becomes compromised, however, "what will be the substitute landmark and what the alternate test of performance if profits no longer stand alone as the prime objective of concern of corporation managers?" What portions of corporate resources should be directed or allocated to public needs; what is or should be the extent of corporate responsibility? ". . . how far can the profit criterion be eroded before the fundamental nature of the enterprise system, and even of our socio-economic structure, begins to change in ways that are

detrimental to our civilization?"

These are questions which are directly the concern of the accounting profession, since the product of account-keeping and also the manner of auditing may require extensive modification if the profit criterion becomes compromised to such an extent that the profit figure represents only one significant effect of the activities of the corporation. More specifically, what new criteria of performance will need to be developed, and how will these new criteria affect the traditional conceptions of the measurement and communication processes of accounting?

This particular problem has been cited in several articles and books, but the special significance of this present volume exists in its summarization of the trend toward multi-goals, the possible effects of this trend, presented in both positive and negative contexts, and the conflicting ways suggested to meet this trend. The two most divergent views are briefly: (a) that the very power and influence possessed by present-day corporations, and expected to be possessed by future-day corporations, demand that corporate managers reflect upon the needs and goals of the participants within the corporation and those directly and indirectly affected by its activities; whereas, (b) the opposite view contends that corporate managers should be required to adhere strictly to an economic function and strive for the maximum profit (within certain limits), implying perhaps that any so-called social needs and goals are the responsibility of the public's representatives.

It would seem that, relative to this problem, the accountant has been presented with a two-fold responsibility. On the one hand he should make every effort to discern whether multi-goals are being applied in the structure of managerial decision-making, with the ultimate anticipation that a more refined classification of the effects of such applications may be developed into the measurement and communication processes of accounting. On the other hand, as a member of society, he should study the relative merits of either view concerning the scope of managerial responsibilities and adopt a position accordingly.

Since this problem is not the sole concern of the various authors of the papers presented, each may touch on this problem in different degrees according to the relevance of the problem to the subject-matter of the respective paper. For example, Professor Simon emphasizes the potentials of the computer-age relative to managerial functions; here the implications of the trend toward multi-goals may be limited to the effects of this trend upon the determination of the values to be included in the decision-making model. David Lilienthal, in outlining the various problems of operating multi-national corporations, only incidentally considers the problems of multi-values in the sense that they may be imposed within different societies and locales. Barbara Ward includes more direct references to the problems of multi-values, but her emphasis is upon the possibility of managers' needing to temper the profit-maximization objective in their relations with underdeveloped economies. The problem is treated in more direct manners by Professor Berle, Professor Hayek, Professor Merton, and Robert M. Hutchins.

In the final paper of this volume, certain of the educational implications of the various trends discussed are suggested. The final section contains a reprint of the address given by Mr. Donald K. David, entitled "The Condition and Destination of Business Education." The trend toward multi-goals is also mentioned in this context.

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JANE DUSTAN AND BARBARA MAKANOWITZKY, *Training Managers Abroad* (New York, Council for International Progress in Management (U.S.A.), Inc., 1960, 2 vols. pp. 527, \$12.50).

International training programs for present and future policy-making managers have become increasingly important with the need to supply executive talent for subsidiaries or affiliates of American companies in both mature and developing countries. The two volumes under review, financed by the Ford Foundation, provide a brief outline of the management education programs of governmental bodies, companies, universities, consultants, associations, foundations, institutes and training centers in Europe, Latin America, the Middle and Far East, the Antipodes, Asia and Africa. An excellent bibliography is included.

As reference books, the study will be utilized by business managements, training and recruitment officers, and university professors of business administration. They are arranged to be easy guides to particular programs and organizations and to management development activities in individual countries, industries and management fields.

After tracing the history and development of management in the United States and the impact of assistance programs in various parts of the Free World, attention is directed to the growth of management training facilities in that area of the world and also in the U.S.S.R. and Soviet Bloc countries. The rise in international management training may be traced to recognition of a need for training in countries where facilities for it did not exist, to the expansion of international trade, and to the enlarging philosophy of mutual responsibility and independence among countries.

Although the activities reported in the two volumes are largely American in inspiration and pattern, they will probably become less so in future years through the introduction of new theories and procedures in the less developed countries. Recent research by the reviewer indicates the vital necessity of adapting American management theory and practice, including management education, to a status where they may be easily transferred to the emerging countries. This task will be carried out by professors of management, companies, and other interested individuals, but it is foreseen that the contribution of national income accounting to developing economies must be explored to a greater extent than ever before. It is also essential that members of the American accounting profession who are preparing papers on "Auditing and Financial Reporting in the World Economy"—the theme of the Eighth Interna-

tional Congress on Accounting to be held in New York in 1962—should acquaint themselves with the contents of *Training Managers Abroad*, for accounting and auditing hold key roles in any training program on the managerial level.

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GROWER GIBBS, *Manual for Mission Treasurers* (Los Angeles: Protestant Episcopal Church in the Diocese of Los Angeles, 1959, pp. iii, 48, \$5.00).

This manual has been written to assist the treasurer of each of the some seventy-one Missions of the Protestant Episcopal Church in the Diocese of Los Angeles. A Mission receives a significant portion of its financial support from the Department of Missions of the Diocese rather than from the local membership. The manual spells out and describes pertinent Federal and State of California statutes and also Diocesan and National Canons of the Episcopal Church which are applicable to a Mission. Rules covering sound financial practices and administration, internal controls, and other procedures are outlined and explained.

The manual is divided into the following ten sections:

- Organization
- Personnel
- Physical Properties
- Financial Policies and Practices
- Accounting
- Reports of Mission Treasurer
- Special Offerings
- Transition of the Mission to a Parish
- Reference Materials
- Annual Audit Procedures

Appendix I, Computation of Assessments, and Appendix II, Records and Forms for Mission Treasurers, complete the manual. The loose-leaf arrangement provides for necessary revisions from time to time.

A Mission Treasurer who does not have an accounting background should be able to understand the application of the instructions with respect to maintaining the monthly cash book for recording and classifying receipts and disbursements. A simple system is provided for transferring monthly cash book columnar totals to the required monthly Diocesan report and to the annual Parochial report. These reports appear to be well planned and should also be informative to the local membership. The manual is especially good in that it emphasizes the need for such matters as adequate insurance coverage for properties, fidelity bonds, and an annual audit performed by a certified public accountant or public accountant.

The author, Treasurer of the Diocese of Los Angeles, is to be commended for preparing this excellent manual. The Vicar and other officers of each Mission should become familiar with the contents of the manual. Compliance with the manual will result in sound financial administration and financial reporting for the Mission. Although the manual has been written specifically for the Diocese of Los Angeles, others interested in church

financial administration and accounting will find this manual to be extremely informative.

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LOWELL W. HERRON, *Executive Action Simulation* (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1960, pp. viii, 88, \$5.00).

Executive Action Simulation in a strict sense is not a book. Rather, it is a volume containing two versions of a manually-scored business game. Participants in the simulation are divided into company teams of six and assume the role of managers of competing hypothetical business organizations. "They make all major decisions concerning prices, advertising budgets and placement, research and development expenditures, inventory levels, market and cost research capital financing, personnel, and distribution of profits." All materials needed for both game play and administration are provided; and pre-cut stencils of these materials may also be obtained from the publisher.

There is much to commend this volume. It makes readily available to educators one of the most sophisticated business games designed to date which does not require an electronic computer for the calculation of company operating results. Structured around a completely deterministic model, the game does not suffer as do some manually-scored simulations from heavy reliance on random elements. Further, the Herron simulation places considerable responsibility for the development of the quantitative data required for analysis upon the players themselves; whereas in many other games, the determination of production costs, inventory charges, etc., is accomplished either by the game administrators or a computer. The players are required, for example, to prepare periodically: income statements, balance sheets, and analyses of cash flow, production and inventory control, work force, labor costs, and the like. Some might contend that such preparation places too much emphasis on "busy work." However, providing the participants with the opportunity to delve into a richness of quantitative data not to be found in most other manual games would seem to represent a major virtue of this simulation.

Although generally well conceived, and recommended by this reviewer, *Executive Action Simulation* is not without fault. One wishes the existing game model had been structured so consumer demand could be influenced by company decisions (a modification which the author does suggest) and the rationale behind the mathematical relationships included in the model had been indicated. Further, the volume would have been strengthened by a fuller description of just how the simulation might be most effectively utilized as an educational tool. Such questions as the following might have been answered: What types of university classes (or company training groups) might gain the most from playing the game? How might the simulation be most effectively integrated into existing courses or training programs and related to other educational materials be-

ing employed? What are the limitations of the simulation as an educational tool?

Games such as this one have gained considerable popularity in educational circles; yet little attention has been given to their possible application in accounting courses. This seems unfortunate; for gaming, by providing a dynamic laboratory experience in analysis and decision-making, might provide an excellent vehicle for helping the accounting student "bridge the gap" between formal course work and "real life" business operating situations. More specifically, gaming might provide him with an opportunity to gain insight into the role of the accounting function in the over-all business organization, the values (and limitations) of various kinds of accounting data to managerial decision-making, and the application of data in a dynamic setting encompassing the passage of time and organizational changes resulting from past actions.

By virtue of its relatively uncomplicated scoring procedure, and its strong emphasis on participant development and application of costing and other quantitative data to decision-making, *Executive Action Simulation* seems an especially appropriate game for those interested in exploring the possibilities of simulation for education in accounting.

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STANFORD L. OPTNER, *Systems Analysis for Business Management* (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1960, 276 pp., \$8.00).

The purposes of the book as set forth by the author are two-fold: to contribute to a general systems theory in the field of business management, and to provide a practical means of understanding and applying the fundamentals of systems analysis in the business environment.

Business is analyzed as a system of interrelated and integrated systems and sub-systems. System analysis is developed as a descriptive and analytic tool for isolating and identifying business problems. It is the author's intention to describe a methodology based upon abstraction rather than a purely empirical approach to problem-solving. As stated by the author, business education has suffered from the lack of an available methodology. Further he states that until now there has been no book devoted entirely to the development of a logic-based approach to business problem analysis.

The subject coverage includes: how to evaluate systems problems, how systems on a company-wide basis can improve the effectiveness of operations, the role of feasibility studies, the place of electronic data processing, and ten case studies, each of which is oriented to illustrate some aspect of systems analysis in areas such as production, organization and marketing. The book is divided into two parts. Part I describes systems analysis; Part II contains ten case studies.

In Chapter 1, structured and incompletely-structured systems are defined. The chapter also discusses the organization of a system and the integration in business systems. The boundary concept is dealt with in Chapter 2. A boundary in the "systems" sense is stated to be one

which restricts the scope of a problem and the amount of detail necessary to understand the process. Further, the chapter covers boundaries as isomorphic systems, filtering input and feedback, and steps in systems design.

Chapter 3 deals with alternatives in system design, designing a new system, side effects, and optimal system design. The introduction states that system design invariably reflects the philosophy of management. Also, that system design is a result of management's policy, its knowledge of an orientation to company problems, and the excellence of the systems staff doing the work. Chapter 4 illustrates the abstraction in the business world, the design of feedback loops, and design of control mechanisms. In abstractions, symbols can be used to represent any value, idea, or object, providing the symbol has been carefully defined. Symbols are used to represent quantitative values. It is possible to set up symbols whose quantitative values will temporarily be unknown, and for the present may only be expressed as qualitative ideas. The systems modules are symbols of qualitative ideas. When they are interlinked to describe an on-going process, they become a model or miniature of the process itself. Model building shows the cause and effect relationships that exist between inputs and outputs.

Chapter 5 emphasizes the importance of the very first steps upon the success of the systems study. The assignment, defining the problem area and boundaries, method of operation, flow charting, and staffing the project are covered in detail.

Chapters 6 and 7 deal with the use and evaluation of electronic data processors. The characteristics of electronic equipment are covered in detail as well as the pertinent features of several specific electronic computers. Chapter 8 pertains to systems costs and the presentation of system cost data. The final chapter in Part I discusses operations research in business. As stated by the author, the purpose of the chapter is to provide a basic understanding of the practical role of operations research in business. Its role in the study of business systems is discussed, and the place it occupies in the search for a general systems theory is cited.

Part II covers ten case studies, one of which is a demonstration case. The cases cover such concepts as: lack of boundaries and an over-all systems concept, the need for a feasibility study based upon systems principles, examining isomorphic systems in a multi-divisional business, and so on.

The author is commended for covering some of the important but difficult areas in business systems analysis in a clear, understandable manner. The presentation provides a practical means of understanding and applying the fundamentals of systems analysis in the business environment. Its contribution to a general systems theory, however, may be questioned by some of its readers. The book is a pioneer effort in the development of a logic-based approach to business analysis. This approach can be expected to expand and become increasingly important as operations research, computers, and business analysts search for optimums.

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Taxes

TAX INSTITUTE, *Taxation and Operations Abroad* (Princeton, New Jersey; Tax Institute, Inc., 1960, pp. x, pp. 308, \$6.00).

This book is particularly current and pertinent in this Spring of 1961.

Two years ago direct private investment by American industry abroad was encouraged by our Government as an important adjunct to our foreign policy. The Point IV Program and spokesmen from the State Department and the U.S. Government generally not only smiled benignly on the export of private capital, but heartily encouraged it. Indeed, legislation was proposed in the form of the Boggs Bill to give further encouragement to foreign investment in the form of U.S. tax concessions. Subcommittee hearings were held on the proposed legislation, and with but few exceptions, witnesses (including representatives of the Treasury) testified that the proposed legislation was a good thing—that it would tend to spur an even greater flow of dollars to foreign countries which almost everyone agreed was desirable.

Well, today (in this Spring of 1961) the mood has changed. What was extremely desirable two or more years ago is frowned upon in some quarters today. The balance of payments deficit, which incidentally has existed for some time, is now public knowledge—and is a cause of great concern. The unemployment problem in the United States is grave. And direct private investment has abruptly turned from a fair-haired child to a whipping boy. American industry is practically on the defensive for doing that which was encouraged but a short time ago. Foreign investments are blamed in large part for the now recognized balance of payments gold-flow deficit; and U.S. industry has been charged with damaging the U.S. economy by "exporting jobs and productive capacity." And preferential U.S. tax treatment of foreign income is looked to as the possible culprit.

The funny part of the whole furor (if furors can be considered funny) is that the condition either has been anticipated or known for some time. The pertinent factors had been seriously considered and debated by classical economists over many decades (back to Adam Smith, in fact) and calmer minds decided long ago that generally the free export of capital is not only beneficial to host countries but also quite beneficial to the capital-exporting country.

Taxation and Operations Abroad contains just about every argument and counter-argument for and against U.S. industry expansion abroad. It is a highly organized, well-edited collection of over twenty splendid papers on the important aspects of U.S. direct private investment abroad—with emphasis on taxation. The symposium at which these papers were delivered took place almost a year and a half ago. But the delay, rather than detracting from the timeliness of the presentation, actually adds to it, because in the heat of the 1961 attack on U.S. investments abroad the papers here add unusual light.

Its first section lays the practical groundwork for the more ethereal economic and policy discussions that ap-

pear later. The tax aspects of the forms of business organization for exporting and manufacturing abroad are outlined—as well as those for service and extractive industries. The attacks by the Treasury on the Western Hemisphere Trade Corporation (the title passage test, etc.) are discussed by a counselor who defended them—and who, it seems, was vindicated by court rulings subsequently handed down. While necessary to a complete presentation, these how-to-do-it papers represent primarily an organized documentation of what had been pretty much part of the good tax man's basic equipment since the war. Thus, an extractive industry can enjoy percentage depletion where mining is conducted by a branch of the domestic parent, etc.

However, more meat is added to this necessary framework in Part Two, "Selected Economic Problems." Roy Blough of Columbia University, debunking the role of taxes as an influence on foreign investment location, dryly suggests that "low taxes in a location where you lose money are not as favorable as high taxes where you make a lot of money." A penetrating discussion of the philosophy (and defense) of the foreign tax credit is presented by R. A. Musgrave of Johns Hopkins University; and a remarkable empirical analysis of the economic aspects of private investment is offered by Peter B. Kenen of Columbia. The author modestly refers to his thoughtful comments as "discursive and speculative"—but from them he draws quite moderate conclusions concerning the desirability of promoting vs. discouraging the outflow of private American capital, the gist of which is that foreign investment is a good thing but let's not overdo it.

Foreign taxes are discussed in Part III. The papers commence with an almost encyclopedic detailed comparison, by R. Palmer Baker, Jr., of the multiple tax factors that can affect industry location among the six Common Market countries. The research that went into this excellent presentation was obviously exhaustive. The ultimate message it conveys is this: In comparing taxes among The Six, don't stop with income taxes (which at the time of writing variously ranged between 40% and 58% on retained profits); rather compare the diverse bases to which these taxes are applied, and, more importantly, analyze the impact of the wide range of indirect taxes that are prevalent in these countries, particularly the so-called "turnover taxes" which can become a major factor in the ultimate cost of goods produced.

Analyses of the tax haven aspects of the Bahamas, Puerto Rico, and Canada follow in three papers, each of which is effective. The Puerto Rican paper is especially interesting in its analysis of the likely future of the 10-year tax exemption there. Sufficient facts and reasoning are presented to enable the thoughtful reader to reach his own conclusions.

"Major Problems of National Policy" is a fitting climax to an otherwise complete discussion of a contemporary phenomenon. Stanley Surrey, who is now with the Treasury, kicked off this session by taking a dim view of tax incentives generally. Congressman Boggs responds by favorably discussing tax incentives for overseas investments; Robert Dodds of the Depart-

ment of Commerce advocates encouragement of such investment by the Government. Jay Glasmann of the Treasury dashes "cold water" on the whole business by taking the position that there is no need to tax-stimulate private capital flow to developed countries; that present law already provides "substantial tax preferences for foreign investment"; and the estimated loss of revenue from additional tax inducements can't be justified at this time. Mr. Glasman also discusses the "abuses" of organizing foreign base companies in tax haven countries.

This book, with its excellently stated, diverse views on the desirability and effect of foreign investments, and rate of tax thereupon, might well be placed in the Congressional Record as a reference for consideration of any proposed legislation involving taxes on foreign income.

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C. ROLLIN NIEWONGER AND JAMES B. BOWER, *Income Tax Procedure*, 1961 Edition (Cincinnati: South-Western Publishing Company, 1961, pp. iv, 260).

In the introduction to this book the authors remark that, "although not an exhaustive treatise, the text provides the basic information needed for preparing ordinary income tax returns for individuals, partnerships, and corporations." In this regard the text accomplishes its objective.

For the non-accounting student who wishes to learn the rudiments of Federal income tax procedure this text might do a very satisfactory job. *Income Tax Procedure* is well written and is a relief to read in contrast to the detailed texts standard in this field. The lack of quotations from the Code and references to exceptions and obscure points of the law make it easy for the student to grasp the basic fundamentals of income taxation.

It is this reviewer's opinion that accounting majors should be subjected to a fuller treatment of income tax procedure than is provided in this text. For accounting students the language of the law, the exceptions to the general rule, and the typical format of the standard texts provide a more suitable background for a later enlarging of one's knowledge in the area of income taxation. Furthermore, as a text for accounting students, *Income Tax Procedure* is deficient in that it does not cover other areas of federal taxation, e.g., social security taxes and estate and gift taxes.

Income Tax Procedure is divided into eight units or chapters and covers the following subjects:

Unit 1—Income Tax Withholding

- Unit 2—Employees' Simplified Income Tax Returns
- Unit 3—Declaration of Estimated Tax By Individuals
- Unit 4—Individual Income Tax Returns
- Unit 5—Partnership Returns
- Unit 6—Corporation Income Taxes
- Unit 7—Corporation Returns
- Unit 8—Minimizing Income Taxes

As the salaried person's first contact with the income tax is usually through withholding from a salary check, the first unit logically discusses the nature of wages, exemptions, the withholding exemption certificate, and the methods for determining the amount of withholding. Unit 2 emphasizes gross income inclusions and exclusions, deductions for adjusted gross income, and adjusted gross income. The simplified 1040A is illustrated at this point. Declarations by individuals are considered in Unit 3. Unit 4, "Individual Income Tax Returns," covers standard deduction, exemptions, and tax computations. How to fill out a 1040W and a 1040 is clearly illustrated. In addition, this unit devotes some attention to accounting methods, accounting periods, and penalties. Unit 5 presents a simplified treatment of partnership returns with only the basic rudiments being considered. Corporation income taxes and returns are considered in units 6 and 7. If one is wondering, by this time, where consideration is given to such important and basic items as capital gains and losses, nonbusiness bad debts, and net operating loss deduction he may be relieved to know that these subjects are discussed in Unit 8. In addition, this final chapter briefly considers installment sales of personal property and long-term contracts.

There is a practice assignment for each unit, with the number of questions and problems averaging 19 for each unit. In addition, there are 37 supplementary problems at the end of the text. Questions and problems are of the workbook type. Answers are to be written in the spaces provided and the pages may be removed from the text for grading. Problems provide ample opportunity for student practice in filling out income tax forms.

Perhaps in large schools of business it might be possible to offer a course in income taxation for non-accounting students and another one for those specializing in accounting. In the majority of schools this would not be practical. Therefore, *Income Tax Procedure* may be of limited use as a text in the majority of collegiate schools of business. Its greatest usage will be in junior colleges and private business colleges. For those latter institutions the text appears to be well designed.

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